THE AK-47

Kalashnikov-series assault rifles

GORDON L. ROTTMAN

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WEAPON

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INTRODUCTION

There have been many important and influential firearms. The Winchester and the Colt won the West, the Enfield held an empire, the Krag brought civilization (or tried to), the Mauser attempted to dominate the world and the Garand stopped it, while the M16 black rifle, one of the defining weapons of the post-World War II era, has long been opposed by a somewhat ugly Russian contender.

This opposing weapon is the Russian *Avtomat Kalashnikova obraztsa 1947 goda* – Automatic Kalashnikov Model 1947, more commonly known as the AK-47, the Kalashnikov, or simply the "*Kalash*." Incidentally, AK-47 is the designation of only the first model. There are now scores of models made not only in Russia but across the world, bearing many different designations. Regardless of what it is called, the AK has become an enduring image of contemporary conflicts – from major conventional battles to gang wars.

While the Kalashnikov AK-47, along with its many variants, is by no means the perfect weapon and has its flaws and limitations, it is the quintessential assault rifle and indeed set the standard for defining what an assault rifle is. More AK-47s and its variants have been made than any other individual small arm in the world. An estimated 75 million true AKs (including foreign-made copies) have been produced worldwide, along with a further 25 million AK variant assault rifles, light machine guns, sniper rifles, and submachine guns. The second-most produced assault rifle is the American M16 with its variants, of which a mere eight million-plus have been produced.

Since the adoption of the design in 1947, the weapons have been manufactured in at least 20 countries, and production continues to this day. It is the longest serving post-World War II military weapon, having notched up 64 years to date, and will continue to serve for many more. Most of its modern contenders are younger, dating from the early 1960s onward.

OPPOSITE
An Acehnese boy brandishes an AK-47 during military training in the jungle at Pidie district, Aceh, Indonesia. Originally a weapon designed for the massed ranks of the Red Army, the simple, robust, and easy-to-use Kalashnikov has become a staple of Third World warfare. (AFP/Getty Images)

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An NVA soldier armed with a rather battered, but functional and reliable AK-47. He was participating in the exchange of POWs by the Four Power Joint Military Commission in 1973. (SSgt Herman Kokojan/DoD)

The AK, originally meant to be a weapon to drive the Nazi invaders from Russia and to defend the Soviet state, has become a symbol of defiance and anti-Western ideology, used (in the past or at present) by at least 80 armies as well as hundreds of guerrilla, insurgent, militia, terrorist, and criminal organizations worldwide.

The AK has many proponents and just as many detractors. Regardless of its limitations (which are often outweighed by its attributes), the weapon has had a tremendous impact on the battlefield, ranging through the full spectrum of warfare. Its impact in combat is one thing, but when a weapon becomes a national or cultural symbol, this is a social statement. It is a society's way of paying homage to the weapon that bought its freedom or that thrust its leaders into power, for good or bad.

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DEVELOPMENT

A new breed of rifle

An assault rifle is usually described as a compact selective-fire weapon with a high-capacity magazine that fires an intermediate-sized cartridge (i.e. a cartridge somewhere between a pistol round and a full-size rifle round). It may or may not possess a pistol grip, bayonet lug, flash suppressor/compensator, and other fittings, but these are simply attachments and features to improve its utility. Although the AK-47 would become the most widely used and the first of the post-World War II assault rifles, it was not the first fully developed assault rifle.

EARLY ASSAULT RIFLES

The distinction of being the first assault rifle goes to the 6.5mm M1916 Fedorov automatic rifle or *avtomat* designed by Vladimir G. Fedorov (often misspelled as "Federov"). This less than successful selective-fire weapon was chambered for the Japanese 6.5x50mmSR cartridge as this was one of the least powerful rifle-caliber cartridges then in use. Its lighter recoil made the rifle more controllable and placed less stress on the weak operating system. Produced in small numbers from 1916 to 1924, the Fedorov was expensive, unreliable, and prone to breakage. Regardless, some were used by the Red Army during the 1939–40 Winter War with Finland and even into World War II. The Fedorov met the criteria for a modern assault rifle, being selective-fire and of short length, possessing a 25-round detachable magazine and a foregrip, and firing an "intermediate" cartridge of sorts.

Between 1936 and 1938 the USSR fielded several full-caliber (7.62x54mmR, "R" for rimmed) semi-automatic rifles with ten-round magazines, the Simonov AVS-36 and Tokarev SVT-38 and -40. The

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The Red Army employed small units armed entirely with or with a high percentage of submachine guns such as these 7.62mm PPSh-41 "balalaiks." Their automatic short-ranged fire proved to be extremely valuable in close fighting among buildings, in forests, clearing fortifications, and on night patrols. However, since they used pistol cartridges their range was too short and their penetration poor. (From the fonds of the RGAKFD via Nik Cornish)

Germans followed with Mauser and Walther versions of the 7.9x57mm Gewehr 41 (Gew.41), two different designs. The improved Walther Gew.43 was more widely issued. But these were still not what were needed.

Meanwhile, German studies had indicated that most infantry actions occurred at ranges of under 400m and that full-power ammunition was unnecessary. High-volume fire was essential since the enemy would be concealed using any available cover, as they fired and maneuvered to close on the objective or defended their position. In contrast, long-range accuracy against exposed targets was seldom necessary to the extent that it had been in the past. Longer-range engagements would be handled by light and heavy machine guns.

To reflect this shift in thinking, the Germans had developed a shorter-range cartridge, the 7.9x33mm *kurz* (short) and it was ready in 1940. (It was officially designated the *Pistolenpatrone* 43 (pistol cartridge 1943) – a cover designation for its development. 7.9mm was not included in the official designation.) Specifications for the new weapon which would fire this cartridge had been released in April 1938; it was initially called a machine carbine (Maschinenkarabiner – Mkb). The first German machine carbines for the new 7.9x33mm *kurz* were the MKb.42(W) and MKb.42(H), developed by the manufacturers Walther and Haenel, respectively.

The Walther design was combat-tested in small numbers, but the Haenel model proved the more successful. A 5,500-man German battle

The 6.5mm M1916 Fedorov automatic rifle or *avtomat* was the first true assault rifle. The weapon proved to be fragile and unreliable, but saw combat into early World War II. It met the definition of a modern assault rifle: shorter in length than standard rifles, intermediate-sized cartridge, selective fire, high-capacity magazine, and foregrip.

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The German 7.9mm MP.43, MP.44, and StG.44 assault rifles set the new standard for assault rifle design and had a great deal of influence on the design of the AK-47. (Nik Cornish at STAVKA)

group was besieged in the Cholm Pocket on the Eastern Front from January–May 1942. Thirty-five of the 50 existing MKb.42(H) machine carbines were parachuted into Cholm in April and proved extremely valuable in the close fighting as these intermediate-sized rounds allowed for higher-capacity magazines, and hence the use of full-automatic assault fire. Although only 1,200 survivors eventually broke out of the pocket, this number would have been far smaller without these new weapons.

About 7,800 of each model were eventually produced and saw testing on the Eastern Front where they proved very popular. Much of the design work on the Haenel model was by Hugo Schmeisser,[1] who later worked on the AK-47 as forced labor.

It is often assumed that Adolf Hitler did not like the 7.9mm machine carbines and forbade their production in 1943. In reality, Hitler directed that the development of new weapons was to halt and that arms production should concentrate on existing machine pistols and machine guns. He feared that the development and manufacture of new weapons would slow production rates of proven standard arms while offering only marginal improvements. He was also concerned that the introduction of a new cartridge would burden the already overstretched logistics system. However, since the MKb.42 machine carbine prototypes had been so well received, the Heereswaffenamt (Army Weapons Office) redesignated them "machine pistols" and went ahead with production. Hitler only approved MP.43 production retrospectively. An improved version, the MP.44, was fielded and in December 1944 was redesignated the StG.44 (Sturmgewehr, or assault rifle, 44). Another myth claims that Hitler bestowed the "assault rifle" designation himself, but this too is highly doubtful. He may have signed the order, but the designation was probably proposed by the Heereswaffenamt.

[1] Hugo Schmeisser (1884–1953) did *not* design the so-called "Schmeisser" MP.38 (Maschinenpistole.38) and MP.40 machine pistols. His father, Louis Schmeisser (1848–1917), designed the world's first submachine gun in 1917, the MP.18/I.

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Mikhail Timofeyvich Kalashnikov

The father of the AK-47 was not a natural firearms genius like John Browning or even a formally trained engineer. M.T. Kalashnikov, known as "Mysha," was born on November 10, 1919, in the small town of Kurya in far eastern Siberia. As the Bolsheviks took control of Russia, Kalashnikov's family were branded *kulaks*, farmers who owned their own land, implements, and even power equipment. They resisted collectivization, and as a result were denounced in 1932 by the Communist Party, and exiled to Nizhnyaya Mokhovaya, Siberia. Kalashnikov complicated his life when he and a friend acquired a Browning pistol. As this was highly illegal they kept it hidden, but the authorities discovered its existence and pressured Kalashnikov to admit to its possession. He continued to deny it but became fascinated by the weapon's workings. Still harassed, Kalashnikov fled the penal colony twice. In 1936 he was finally accepted as a railroad engineer apprentice and working in the yard shops he found that he possessed a knack for mechanical engineering.

His life changed further when he was conscripted into the Red Army in 1938. Because of his mechanical aptitude he was initially assigned to the tank troops, but soon found himself re-assigned to engineering work, in the course of which he developed a projectile counter for tank guns, a device to measure tank engine performance, and a pistol mounting that made it unnecessary to open tank hatches to fire on attacking infantry. The former Kulak also became a Communist Party member.

Kalashnikov was commanding a T-34 tank of the 12th Tank Division when the Germans poured into Russia in June 1941. In October he was wounded in action and while convalescing overheard infantrymen complaining about their weapons. Kalashnikov resolved to design a new type of light automatic weapon that would drive the fascist invaders from the Motherland and defend it from future invaders.

He began working on a submachine gun design in early 1942 and prototypes were run off. Despite its ultimate failure, he learned much from this effort and was given additional engineering training. He soon began work on a semi-automatic carbine design. This too failed acceptance, but, undaunted, in 1945 the aspiring weapons designer set out to develop a new automatic weapon, and this would result in the AK-47.

Since 1949, Kalashnikov has lived and worked in Izhevsk, the great arms production center established during the war 966km east of Moscow. He is married with three children.

When he retired he lived in virtual poverty, until he was permitted to visit America in 1990, the first time he had been allowed to leave Russia. Hosted by Ed Ezell, small arms curator of the Smithsonian Institution, Kalashnikov met Eugene Stoner, the M16's designer, and they fired each other's weapons. The Russian government, realizing Kalashnikov's drawing power and ability to promote weapons exports, allowed him to make further visits to the West and granted additional privileges including a driver/assistant. Kalashnikov has always maintained that, although the AK-47 has been used for malevolent purposes, it was specifically designed simply to defend the Motherland. He made nothing on the AK while Stoner was paid a royalty of almost US$1 on each M16 produced.

In recognition of his services to the state Kalashnikov was promoted through the officer ranks and retired as lieutenant-general (equivalent to a Western two-star major-general).

ABOVE Mikhail Kalashnikov with the weapon that bears his name, 1994. (© Epix/Sygma/Corbis)

Decorations and honors:

Hero of Socialist Labor (twice)
Stalin Prize 1st Class
Lenin Prize
Order of Lenin (three times)
State Prize of the Russian Federation
Order of the Red Banner
Order of the Red Banner of Labor
Order of the Red Star

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It is sometimes said that Mikhail Kalashnikov designed the AK-47 without having seen the German assault rifles, but this is not true. He began work on it in 1944 when captured Sturmgewehren were available. There can be no doubt that the Soviet forces admired the MP.44 and other similar weapons which had been developed, having witnessed first hand their impact on the battlefield.

AMMUNITION

Before discussing the development of the AK we must first examine its ammunition. AKs have been made in three main calibers, the most widely used being the 7.62x39mm followed by the 5.45x39mm – both Soviet designs. The 5.56x45mm version, firing the standard US/NATO round used in the M16 and many other weapons, is intended for export. AK replicas have been made in .22 Long Rifle rimfire (5.6mm) as well.

In 1942 Soviet arms authorities decided that what would become known as an "intermediate cartridge" would make it possible for infantrymen to be armed with a compact full-automatic weapon. Intermediate cartridges are "shortened" rifle rounds, i.e. shorter and somewhat less potent than full-size rifle and machine gun rounds but larger and longer-ranged than pistol-caliber submachine gun rounds.[2] In the Soviet case the intermediate 7.62x39mm fell in between the 7.62x54mmR rifle/machine gun round and the 7.62x25mm pistol/submachine gun round. Intermediate cartridges, while less powerful than full-power rifle rounds, nonetheless possess sufficient ballistics to be effective at 300–500m ranges, the maximum range at which most modern engagements occur. The intermediate cartridge's lighter recoil meant that lighter weapons were able to withstand prolonged automatic fire and allowed more ammunition to be carried by the soldier.

From the 1930s the Soviets had been developing several semi-automatic, full-power, ten-round magazine-fed rifles in 7.62x54mmR. They were intended to replace the bolt-action Mosin-Nagant rifles which had been arming the soldiers of the USSR for almost 50 years. Difficulties were encountered with these rifles owing to the cartridge's heavy recoil and the beating it inflicted on the comparatively flimsy actions. More robust actions would make the weapons too heavy. The intermediate cartridge was the answer to the problem.

The Germans had come to the same conclusion, but earlier. Polte Armaturen und Maschinenfabrik AG at Magdeburg had begun work on such a round in 1938, the Polte Versuchspatrone 38 (Polte experimental cartridge), which resulted in the 7.9x33mm *kurz* or Pistolenpatrone 43 (pistol cartridge). This round was used in the first modern assault rifles. While the superficially similar future AK round is sometimes thought to be

[2] Other common intermediate cartridges are the German 7.9x33mm *kurz*, 7.62x45mm Czech Short, .280/30 British NATO contender, US/NATO 5.56x45mm for the M16, Soviet 5.45x39mm for the AK-74, and, for all practical purposes, the .30 carbine. Today the term is little used as the once-"intermediate" rounds have become the standard cartridges for rifles and light machine guns.

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The 7.9mm *kurz* MP.43 machine pistol with its 30-round magazine greatly influenced the design of the future AK-47. While similar on the exterior, they were fabricated using very different materials and techniques, and their internals functioned differently. (Imperial War Museum, FIR 6140)

copied from the 7.9x33mm, the Germans' work was highly classified and as far as is known the Soviets were not aware of it until it made its appearance on the battlefield in mid-1942. The Soviet designers were apparently familiar though with the 7.75x39mm Kurzpatrone developed by Gustav Genschow und Company A.G. (GECO) in Berlin-Treptow in 1934–35. There are too many coincidences for them not to have been. The Kurzpatrone and 7.62x39mm have the same case length, 1-to-20 ratio body taper, shoulder angle, head to shoulder distance, and caliber. The Germans measured caliber by the weapon's bore diameter and the Soviets by the bullet diameter, so the German 7.75mm bullet was actually 7.62mm. However, there is some debate as to whether the Russians had access to these rounds.

The 7.62x39mm was developed by engineers Nikolay Yelizarov (often misspelled "Elisarov") and Pavel Ryazanov in six months in 1943. The round they developed became the *Patrone kalibra* (cartridge caliber) 7.62mm Model 1943 year. It became known by a variety of names: 7.62mm Russian or Soviet Short, 7.62mm Warsaw Pact, 7.62mm ComBloc, 7.62mm AK, and 7.62mm M43. In the early days it was often known in the West as the 7.62x38mm as the case is actually 38.7mm long, but 7.62x39mm is now the accepted designation.

It has often been said that Soviet 7.62mm ammunition is interchangeable with the 7.62mm NATO round. Of the five different 7.62mm cartridges used by the former Warsaw Pact and other communist client states, none are interchangeable with the NATO 7.62x51mm round. Warsaw Pact 7.62mm rounds included the 7.62x25mm (pistols and submachine guns), 7.62x38mmR (Nagant revolver), 7.62x39mm (SKS carbine, AK assault rifles, and light machine guns), 7.62x45mm (Czechoslovak rifles and light machine guns), and 7.62x54mmR (rifles and machine guns). None of these can be fired in 7.62mm NATO weapons or vice versa. These rounds have completely different dimensioned and shaped cases (length, head, body, shoulder angle, extractor groove or rim) from the 7.62mm NATO round; in addition, their bullets are .311cal, while the 7.62mm NATO bullet is .308cal.

The 7.62x39mm is a bottle-necked, rimless round with a steeply angled case body, which resulted in the AK's distinctive curved magazine. The head diameter (base of the case) is 11.35mm and the overall length with standard bullets is 56mm. Most cases manufactured in former Communist Bloc states and their clients were steel, but copper- or brass-washed or lacquered olive green, gray green, gray, or dark brown are more common.

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Large numbers of full rifle-caliber SVT-40 semi-automatic rifles were used, especially early in the war. The cartridge was too powerful for the comparatively fragile weapon, and the rifle's length and 10-round magazine was inadequate for close-in fighting. (Courtesy of the Central Museum of the Armed Forces Moscow via Nik Cornish)

Brass cases are made mostly in the West, but in other countries as well. The first weapon to be issued in this caliber was the *Samozaryadniy Karabin sistemi Simonova* (Simonov SKS Self-loading Carbine), adopted in 1945 and first fielded in 1949. It served alongside the AK for many years.

The mild steel-cored Type Ps ball bullet weighs 8.9g (125 grains) and is 26.5mm long. The propellant is 1.6g (24.7 grains) Type B nitrocellulose. Total weight is 18.21g (281 grains). Typically the muzzle velocity is 710m/s

7.62x39mm M1943 AK cartridges, size comparison with US 1 cent coin (19.05mm/.750in) and 10 Euro cent (19.75mm/.777in). Left to right: ball Type Ps; armor-piercing incendiary Type BZ (black tip, red band); Chinese armor-piercing incendiary Type 56 (black tip); incendiary-tracer Type Z (red tip); tracer Type T45 (green tip); and grenade launcher (rosette crimp). (Author's collection)

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AK and related cartridges for comparison. Left to right: 7.9x33mm *kurz* 43m.e. (as used in German World War II assault rifles); .30 Carbine (US World War II M1 carbines); 5.56x45mm NATO M193 (rifles and light machine guns); 7.62x51mm NATO M80 (rifles and machine guns); 7.62x54mmR M1908 Type L (Communist Bloc rifles and machine guns); 7.62x45mm Kr 52 (Czechoslovak rifles and light machine guns); 7.62x39mm M1943 Type Ps (Communist bloc SKS carbine, AK-47/AKM assault rifles and light machine guns); and 5.45x39mm 7N6 (Communist Bloc AK-74 assault rifles and light machine guns). (Author's collection)

(2,300fps) and it has a muzzle energy of 2,010 joules (1,480 ft lbs).[3] Its performance is roughly that of the .30-30 Winchester, once credited with killing more deer than any other cartridge. The T-45 tracer burns green to 800m.

The Type Ps ball round used by most countries has a gilding metal (copper and zinc alloy) full-metal jacket open at the base exposing the lead envelope. A blunt mild steel core is contained within the lead envelope. This provides a very stable bullet which typically inflicts a through-and-through wound, and seldom tumbles. The bullet remains stable on impact, only yawing or tumbling if a bone or major organ is struck. Impact seldom creates a large temporary cavity that would damage organs and blood vessels. As a result 7.62x39mm wounds are frequently not overly destructive. The mild steel core does not appreciably increase any penetration of armor or hardened steel plate. It does provide better penetration of "softer" materials such as planks, logs, sandbags, cinder blocks, light masonry, etc. In 1994 the US Government classified AK ammunition with mild steel cores as armor-piercing (in military terms it is not) and prohibited its importation for civilian sales.

Some countries later adopted ball rounds with lead cores. These bullets were slightly shorter. The solid lead core with a flat rather than a tapered boat tail bullet shifted the center of gravity rearward. This caused the bullet to destabilize upon impact and tumble through soft tissue. While these bullets caused more serious wounds, they provided less penetration through typical hard cover materials. Improved 7.62mm rounds were introduced in the 1990s.

Although the Soviets designated the round the M1943, other countries often bestowed their own designations: for example, China (Type 56), Czechoslovakia (vz 57), and Yugoslavia (M67). Headstamps (markings on the base of the cartridge) vary greatly by country, but the most common are a one- to three-digit number at the 12 o'clock position to identify the factory and a two-digit year of manufacture at 6 o'clock.

[3] For comparison the M16's 5.56x45mm NATO M855 with a 4.02g (62-grain) bullet is 950m/s (3,100fps) and 1,767 joules (1,303 ft lbs).

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7.62x39mm M1943 cartridges

Type	Identification
Ball Type Ps	plain bullet, often with red mouth band
Ball 57-N-231	plain bullet (1990s)
AP-I (Armor Piercing Incendiary) Type BZ*	black tip, red band
AP (Armor-Piercing) 7N23 & 7N27	black tip (1998)
Incendiary-tracer Type Z	red tip
Tracer Type T-45 & T-45M	green tip
Subsonic Type US	black tip, green band
Short-range practice	white tip round nose†
Grenade launcher	black rosette crimp
Blank‡	plain rosette crimp
Dummy	longitudinal crimps in case

* From 1967 China identified AP-I with a black-only tip for simplicity.

† Czechoslovak with short round-nosed plastic bullet.

‡ Blanks are also made with plastic cases.

Unusual markings will be found on special cartridges unique to different countries. Often red or other color lacquer is found around the case mouth and primer for waterproofing. Sometimes red, green, or black lacquer is applied to a primer or its annulus (rim of the primer pocket) as part of the bullet type identification.

AK-47 ASSAULT RIFLE DEVELOPMENT

The development of the AK-47 assault rifle was not a one-man affair, as is often assumed, but a joint effort by many. The development of what would become the AK-47 began in July 1943 when a captured German 7.9x33mm MP.43 assault rifle was demonstrated before an arms committee. A Soviet design team rapidly developed the counterpart 7.62x39mm M1943 round for use in an as-yet undesigned weapon which could be either a semi-automatic carbine or an assault rifle similar to the German models. The heavy use of submachine guns by some Soviet units demonstrated the value of shorter-ranged automatic weapons. The weapons firing the underpowered standard 7.65x25mm cartridge used in Soviet pistols and submachine guns lacked penetration and lethality, and were ineffective at ranges over 100m. The People's Commissariat on Armaments announced the competition for a new rifle in the fall of 1943. Some 15 designers competed to design a new weapon for the Red Army. However, Kalashnikov was not among them during the first two years. Testing of the proposed designs took place at the Schurovsky Test Grounds at Kolomna in 1944.

Earlier, in 1942, Mikhail Kalashnikov had designed a 7.62x25mm submachine gun, and had been given permission for prototypes to be made at the Moscow Aeronautics Laboratory. Though these were rejected, Kalashnikov's talents had been recognized and he was given technical training to improve his skills, and assigned to the Small Arms and Mortar Research and Proving Ground near Moscow to achieve this. He next worked on a 7.62x39mm semi-automatic carbine in direct competition with the rival

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Master Sergeant Mikhail Kalashnikov describing the design of the prototype of the AK-47 to senior officers.

firearms designer Sergei Simonov. Kalashnikov's contribution, simply called the "black-lacquered automatic weapon No. 1," failed to measure up to Simonov's, which was adopted as the SKS Self-Loading Carbine Simonov Model in 1945. This weapon would serve alongside the AK-47 for years.

Kalashnikov finally officially joined the effort to design an assault rifle and submitted his first model in mid-1946. Like his earlier efforts the AK-46 proved inadequate – it had too many moving parts – and further development of the weapon was ordered to cease. However, Kalashnikov appealed to Major Vasily Lyuty, the test director, to change the official conclusion. He gave the AK-46 a second, more charitable look and recommended 18 design changes. Lyuty and another engineer, Vladimir Deikin, participated in the project even though Lyuty was overseeing the tests and competition. Kalashnikov's graphic designer wife Ekaterina aided with engineering drawings. Former German engineers were also involved including Hugo Schmeisser, designer of the MKb.42(H) and MP.43/MP.44/StG.44 assault rifles, who was forced to work for the Soviets from 1945–52. Although some German design influence is discernible and the various experimental weapons appeared externally similar to the German assault rifles, internally they were very different.

Kalashnikov's competitors dropped out one by one. Alexey Sudayev had died in 1945 and his AS-44 was removed from the competition. Fedor Tokarev's model was plagued by the same lack of robustness experienced

The SKS self-loading carbine was the creation of Soviet firearms designer S.G. Simonov. It was a gas-operated weapon, intended to exploit the introduction of the new Soviet 7.62mm M43 cartridge. This was an "intermediate" cartridge – less powerful than the contemporary ammunition used in rifles and machine guns, but with a much superior performance to the pistol cartridges used by submachine guns. The SKS was eventually replaced by the AK in front-line service, but remained in use by second line and militia units until the 1980s. It also continued to be used for ceremonial duties. (IWM FIR 6026)

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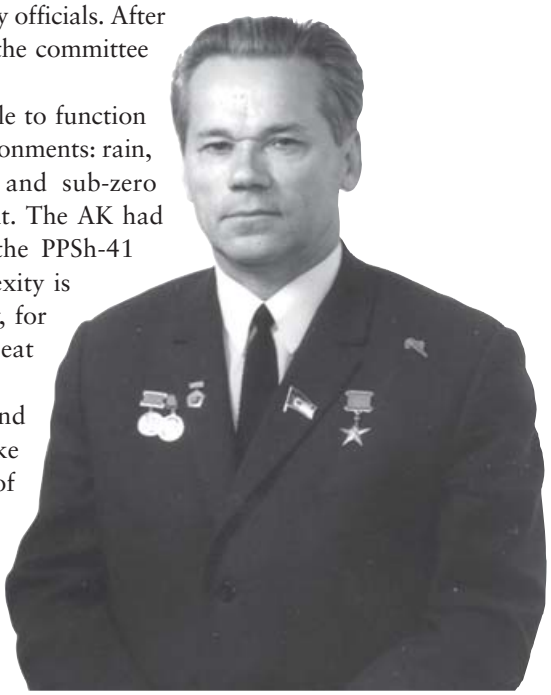
in his earlier semi-automatic rifles. Shpagin withdrew as he could not adapt the new round to his design. Bulkin's temper would eventually eliminate him, but his AB-46 prototype influenced Kalashnikov's design. The most complimentary withdrawal was by Degtyarev, who took back his jam-prone entry after handling Kalashnikov's prototype.

A great deal of effort went into perfecting Kalashnikov's design. Soldiers firing the prototypes were interviewed as to what they liked and did not like, and suggested improvements. Combat veterans too were questioned as to what they felt made an effective combat weapon, something previously unheard of in the USSR. Much attention was paid to small details to make it more reliable, usable, and rugged. Such points as ease of disassembly and cleaning were considered as well as reducing the number of parts. The tolerances of the internal parts, especially the few moving parts, were made loose. In many weapons loose tolerances caused by poor design or manufacturing created poorly functioning weapons. The AK-47's loose tolerances were intentional and it was designed to operate well as such. Every part experiencing cracks or the slightest design flaw was redesigned and reinforced; just one example of this attention to detail is the trigger, which was redesigned ten times. Kalashnikov proved adept at listening to the advice of his instructor and his mentors and, of course, to the needs of soldiers, as well as at incorporating these suggestions or needs into his design.

Final testing was completed in January 1947 with only three entries remaining: Bulkin's KB-415, Dementyev's KBP-520, and Kalashnikov's KBP-580, which he nicknamed the "Mikhtim," derived from the first letters of his name and his patronymic Mikhail Timofeyevich. Bulkin was leading in the competition when he was dismissed owing to his temper and inability to acquiesce to the recommendations of military officials. After extensive range firing tests and yet more refinements the committee selected the prototype AK-47 on January 10, 1948.

The weapon proved to be rugged, reliable, and able to function under a broad range of field conditions and harsh environments: rain, water immersion, mud, sand, dust, extreme heat and sub-zero temperatures, poor maintenance, and rough treatment. The AK had been thoroughly "soldier-proofed." The father of the PPSh-41 submachine gun, Georgy Shpagin, declared, "Complexity is simple, simplicity is difficult." The AK-47's simplicity, for what could have been a complex weapon, was a great achievement.

The gas cylinder interior, gas piston, chamber, and bore were chrome-plated to prolong their life and make for easier cleaning. The weapon possessed a minimum of moving parts. For example, the very simple bolt consisted of seven parts: bolt head, bolt cylinder, firing pin, extractor and spring, and two retaining pins. The trigger and firing mechanism had the same number: hammer, trigger, disconnector, full-automatic sear, selector lever linked to the sear, and two springs.



A post-World War II photograph of Mikhail Kalashnikov displaying some of the higher awards of the many he was bestowed. (From the fonds of the RGAKFD via Nik Cornish)

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Soldier-proof and even pirate-proof. This totally saltwater-rust-encrusted Chinese Type 56 (AKM) was captured from Somalian pirates and by right should be inoperational, but it still fired. Two magazines are taped together with plastic electrical tape. In Somalia AKs sell for about US$300–400 and ammunition is just 9–12 cents a round.

The resulting weapon was much more compact than bolt-action long rifles but larger than the submachine guns it replaced. It was also heavier than these weapons and more so when loaded. It was, however, a much more capable weapon in that it provided every rifleman, as well as support personnel, with a selective-fire weapon with a high-capacity magazine. Indeed, it more than quadrupled the rifleman's practical rate of fire. The AK-47 was gas-operated, fired from a closed bolt, and was capable of semi- and full-automatic fire to a practical effective range of up to 400m. It was provided with a bayonet, web sling, and a cleaning tool set carried in the butt trap. These characteristics applied to most AK variants.

The AK-47 was officially adopted in 1948, but production would not begin until 1949. Additional testing and almost 100 further improvements were made, many to accommodate mass production. Individually machined receivers were used in the prototypes, but the redesign introduced faster-made forged receivers. This made the production weapons slightly heavier. Kalashnikov was not a production engineer and a special engineering team took over this phase. A large plant had to be built along with all its machinery to build the projected hundreds of thousands of weapons.

The AK-47's technical specifications

The original AK-47 *avtomat* was a comparatively simple weapon yet one with advanced capabilities and features ahead of its time. It was very much influenced by the German MP.43/MP.44/StG.44 assault rifles in general appearance, but was very different internally. The German weapons were made largely from stampings while the AK-47 was mostly forged and machined. Regardless, the AK-47, even with a more robust magazine, was a pound lighter than the StG.44 owing to the time spent on its refinement. The AK-47 was also vastly more rugged and the StG.44's reliability did not begin to approach that of the *avtomat*. Nor did the AK-47 exhibit the characteristics that so commonly defined many Soviet weapons, that of crudity and lack of refinement.

The AK-47 is considered by many to be a somewhat awkward and even clunky looking weapon. Soviet design philosophy rejected refined streamlined designs as being anti-Soviet. Their weapons were to look

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intentionally robust and be practical and utilitarian. The AK-47 had a wooden forearm and shoulder stock (containing a butt trap for the cleaning kit) and a plastic pistol grip, all solidly attached. The smooth-sided, staggered-row 30-round magazine was forward of the pistol grip and trigger with the magazine release tucked between the trigger guard and magazine. The gas cylinder was over the barrel, unlike most gas-operated weapons where it is under it. This simplified the design as the operating rod drove the bolt back without requiring a more complex design for the rod to clear the magazine well and ejection port. The operating rod was two-piece, allowing the forward portion to be replaced when excessively worn, which eliminated the need to replace the entire assembly. The rear sight was the tangent type, graduated from 100–800m at 100m intervals. It also included a quick setting for battle sight zero (300m). The post-type front sight was on a triangular base and protected by ears. There was a left-hand threaded muzzle ring, doubling as the bayonet ring fitting, which could be removed, allowing a blank adapter to be screwed on. This also accepted a cup-type grenade launcher or a PBS-1 silencer (40mm diameter, 270mm long). Silencers were not general issue, but were used by *Spetsnaz* (the Russian special forces) and the KGB. The PBS silencers were only moderately effective with marginal sound suppression. They relied on rubber discs and these had to be replaced after 20–25 shots. The author's unit in Vietnam captured a Chinese Type 56-1 (AKMS) fitted with a silencer from a local Viet Cong (VC) company and it was thought to have been used for assassinations. If one shot was fired it might go unnoticed, but multiple shots were distinctive. Subsonic ammunition was available, but for close-range shots standard ball might be used.

Beneath the barrel was a cleaning rod and bayonet lug. The ejection port was on the right side with the operating handle located to its rear. The port was larger than necessary to ensure that ejected cases cleared it.

AK-47 and AK-47S Type III* assault rifle characteristics

The German StG.44 assault rifle is included for comparison.

	AK-47	AK-47S	StG.44
Caliber	7.62x39mm	7.62x39mm	7.9x33mm
Overall length	870mm (34.25in)	880mm (34.64in)	940mm (37in)
Length w/stock folded		642mm (27.27in)	
Barrel length	416mm (16.37in)	417mm (16.41in)	419mm (16.5in)
Weight w/o magazine	3.90kg (8.59lb)	3.85kg (8.49lb)	5.21kg (11.5lb)
Magazine	30-rd curved	30-rd curved	30-rd curved
Cyclic rate	600rpm	600rpm	500rpm

* The "S" indicates *skladnoy* or "folding." This was an early development of the AK-47 which included an underfolding metal shoulder stock.

Comment on weight The Type III was the most numerous of the AK-47 and AK-47S sub-variants. Types I and II weighed 4.085kg and 4.125kg respectively.

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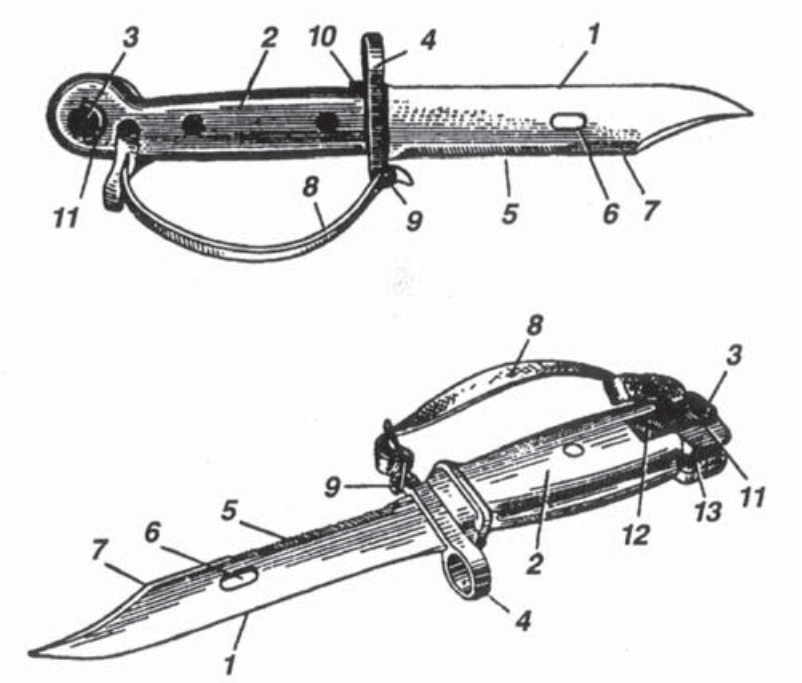
The selector lever was to the rear of the ejection port. In its uppermost position the selector lever was on safe and positively prevented the operating rod from being pulled completely to the rear. Shifting the selector down one notch placed the weapon on full-automatic and the lowest notch was semi-automatic. The trigger guard was sufficiently large to allow it to be operated while wearing gloves. While avoiding a smooth streamlined design, it was nonetheless designed with a minimum of protruding parts that would catch on obstructions. The forward sling loop was on the left side of the forearm's forward end and the rear swivel was originally on the bottom of the butt, but was moved to the left side of the small of the stock early in production. The original bayonet had a small plastic grip and was 324mm long with a 200mm double-edged blade derived from the Tokarev SVT-40 semi-automatic rifle's bayonet.

A folding-stock version, the AK-47S (S = *skladnoy priklad*, folding stock) was also fielded with a metal frame stock that folded beneath the weapon for use by paratroopers and *Spetznaz* as well as being supplied as on-board equipment for some vehicles and helicopters. It was also used by the KGB and Border Troops. The hinged butt piece could be folded up under the forearm. The AK-47S could be fired full-automatic with the stock folded, but the selector lever could not be switched to the lowest position – semi-automatic. The stock was unlocked to open or close it by pressing detent buttons (small, spring-loaded buttons) on the hinge points on both sides. The rear sling swivel was on the left hinge point and the forward loop mounted further forward on the left side of the gas cylinder fitting. The stock was not solidly rigid and as it was not insulated with rubber or plastic could freeze flesh on the firer's cheek in extremely cold weather; its design was copied



There are many minor variants, but these are the two basic designs of AK rifle bayonets. (**TOP**) the early type used on AK-47s and AKMs, (**BOTTOM**) the late type used on AK-74s and later AKMs.

KEY

1. Blade
2. Grip
3. Locking latch
4. Muzzle ring
5. Saw teeth upper edge
6. Hole for scabbard lug for use as a wire-cutter
7. Lower cutting edge
8. Leather strap
9. Securing strap catch
10. Lug
11. Safety lug
12. Lug mounting screw
13. Mounting slot

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THE RED ARMY'S AK ASSAULT RIFLES

The standard AK variants used by the Soviet Army included:

(1) 7.62mm AK-47 assault rifle of 1949 with a 30-round magazine,

(2) 7.62mm AKM assault rifle of 1959 with 30-round magazine,

(3) 5.45mm AK-47 assault rifle of 1978 with 30-round magazine,

(4) 5.45mm AKS-74U submachine gun of 1979 with 45-round magazine.

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from that of the German MP.40 and a similar version was used on the Soviet Sudarev PPS-42 and PPS-43 submachine guns.

As production runs continued, so did refinements, some of them significant. AK collectors identify three basic "types" of AK-47s, although such "type" designations are not official. There was an equivalent AK-47S for each of the three types. The 1949–50 production Type I's receiver was stamped and riveted with a milled barrel trunnion (the block holding the barrel to the lower receiver) and butt stock insert. Soviet stamping and riveting technology were poor and it was not possible to ensure consistent quality parts or workmanship.

The Type II was introduced in 1949 while the Type I was still in production and parts from both Types I and II could be found in a given weapon. Type II production from 1949–53 had a receiver milled from a solid steel block, making production more costly and time consuming (it took 120 milling operations, and 80 percent of the original blank receiver block was milled away, plus it required skilled machinists). It possessed a steel boot to reinforce the small of the stock. Rectangular lightening cuts were milled in both sides of the receiver and the stamped upper receiver cover was thicker. There were numerous other manufacturing details to speed production or enhance the weapon. Pistol grips for the Types II and III were wood rather than the Type I's plastic.

Further refinements were made in 1953 resulting in the Type III, which reduced the weight by about 0.25kg. The receiver was redesigned to be more easily and quickly produced, the shoulder stock tangs were more rigid, and other production processes were incorporated including deleting the lightening flutes in the forward portion of the operation rod. The rear sling swivel was fitted on the rear left side of the receiver and the front loop on the left side of the gas cylinder fitting. As solid wood stocks sometimes split, the Type III was provided with laminated birch stocks. In 1955 new magazines were provided with three reinforcing ridges on both sides as opposed to the earlier smooth-sided (also known as slab-sided) magazines. The Type III was the most numerous version of the original AK-47s and was produced until 1959.

Besides the USSR, AK-47s were produced under license in Bulgaria (1959, AKK), East Germany (1959, MPi-K), Hungary (1959, AK-55), Poland (1956, pmK [also known as kbk AK]), China (1956, Type 56, Type 56-1 with under-folding stock), North Korea (1958, Type 58A), and Yugoslavia (1964, M64). Most of these were identical to the Soviet AK-47 or with only minor differences.

An AK-47 Type II, identifiable by the steel reinforcing band at the small of the butt stock. Above the magazine in the lower receiver side can be seen the rectangular lightening cuts (found on both sides). (US Army)

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A masked Iraqi insurgent carries an AK-47 Type II, note the butt stock reinforcing band. The Type II rifles were produced from 1949–53; this example is an approximately 60-year-old weapon, still in active use.

AKM ASSAULT RIFLE DEVELOPMENT

The *Avtomat Kalashnikova Modernizirovanniy* – Automatic Kalashnikov Modernized – was adopted in 1959 to incorporate improvements, speed production, and reduce cost. Its design was overseen by Kalashnikov's design team in 1957–58. The result was an even better AK, lighter by one-and-a-third pounds, with slightly improved accuracy and reliability. The main improvement was a newly designed stamped steel receiver.

Issue of the AKM began in 1961 and continued until at least 1977. It was the most numerously produced of the AK family, with 10,278,300 made in the USSR at Izhevsk Mechanical Works and Tula Arms Plant. Most so-called "AK-47s" encountered throughout the world are more likely to be AKMs or foreign-made equivalents. AKMs are still found in Russian second-line units and are held in reserve stocks.

Like the AK-47, AKMs were license-produced by other client states: Albania (1974, Type 56 copy), Bulgaria (1978, AKM), East Germany (1965, MPi-KM), Hungary (1963, AKM-63 [also known as AMM]), Poland (Kbk AKM), and Romania (1963, PM md 63 [also known as AIM]). China also made the AKM, but retained the Type 56 designation originally used for its AK-47. Most also produced folding-stock AKMS equivalents. Many countries producing the AKM developed improved and modernized models, some of which deviated from the "standard" AK appearance owing to different "furniture" (collector's term for stocks, grips, forearms) and very different folding-stock designs. Grenade-

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launching versions were common. Some of these, the East German variant for example, are innovative and often of better quality than their Soviet counterparts. Romania issued a semi-automatic-only version to its Patriotic Guard, a part-time militia, marked with a large "G" on both sides of the trunnion. China produced the Type 81, an improved variant of the Type 56, issuing it in 1983 and widely exporting it.

The AKM's technical specifications

Besides the newly designed stamped steel receiver, the AKM possessed a lighter, but reinforced upper receiver cover, a small muzzle compensator to reduce the leftward drift when firing full-automatic (added in 1962/63), grip rails added to the wooden forearm, checkered pistol grip, and the rear sight graduated to 1,000m rather than 800m. The compensator could be unscrewed to attach a blank adapter or silencer. The rear sling swivel was on the lower left edge at the rear of the butt and the forward sling loop on the left end of the forearm. There was a stamped oval depression on both sides of the receiver over the magazine well to hold it in place more rigidly. The bolt carrier was lighter and even though there were minor differences in shape, it was interchangeable with the AK-47's. Other parts were modified too, but were still interchangeable with AK-47 parts in many cases. Orange-colored fiberglass-impregnated plastic magazines were introduced in 1968. The feed lips and floor plate were steel. Early production AKMs had a phosphated anti-rusting/corrosion finish and later ones were black-enameled.

The bayonet lug was modified and new bayonets issued. The 1959 6H3 had a rubber-insulated steel scabbard with a lug that could be fitted in a hole in the blade and used as a wire-cutter to cut electrified wire. It also had saw teeth on the back of the blade. The early 1970s 6H4 had a plastic scabbard while the 1984 6H5 used high-strength polyamide plastics and a double-edged blade. They all have an overall length of 273mm with a 150mm blade. The Chinese Type 56 had a permanently attached 240mm folding spike bayonet.

A folding-stock version, the AKMS introduced in 1959, was issued with stamped steel arms rather than the AK-47S's machined steel arms and offered no improved rigidity. The AKMN of 1959 was fitted with a side-rail on which to fit an NSP-2 infrared night vision sight and had a light bipod (N = *Noch*, or Night). The later AKMP had tritium illuminated aiming points on the front and rear sights to improve night engagements.

In the late 1950s an effort was made to improve and rationalize Soviet small arms. At the time the standard squad light machine guns were the 7.62x39mm RPD and RPDM, the *Ruchnoy Pulemyot Degtyareva Modernizirovanniy* (Degtyarev handheld machine gun modernized), which had been in use since 1953. This was a bipod-mounted weapon with a 100-round belt contained in a drum magazine. It was effective, but weighed 6.6kg. Nevertheless, it was the lightest belt-fed machine gun in service and lighter than most squad automatics. Its main drawback was that it required very different training and spare parts than the AK-47 it served beside.

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THE KALASHNIKOV EXPOSED

Soviet 7.62mm AKM assault rifle

1. Muzzle compensator
2. Front sight
3. Cleaning rod
4. Gas port
5. Bayonet lug
6. Operating rod
7. Forearm
8. Rear sight
9. Chamber
10. Return spring and guide
11. Bolt and firing pin
12. 30-round magazine
13. Magazine catch
14. Hammer
15. Disconnector
16. Trigger
17. Pistol grip
18. Return spring guide detent
19. Butt stock
20. Cleaning kit
21. Butt plate

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Ethiopian National Defense Force soldiers armed with AKM assault rifles conduct a training exercise. (Eric A. Clement/US Navy)

AKM and AKMS assault rifle characteristics

	AKM	AKMS
Caliber	7.62x39mm	7.62x39mm
Overall length	898mm (35.35in)	913mm (32.0in)
Length w/stock folded		659mm (25.94in)
Barrel length*	436mm (17.16in)	436mm (17.16in)
Weight w/o magazine	3.29kg (7.25lb)	3.51kg (7.73lb)
Magazine	30-rd curved	30-rd curved
Cyclic rate	600rpm	600rpm

* Length includes the small muzzle compensator.

A light machine gun version of the new AKM was developed, overseen by Kalashnikov's team. This gun, which entered service in 1961, was more than just an AKM with a long barrel and bipod. It was optimized as a squad automatic weapon and intended mainly for prone firing, but could be fired from the shoulder and underarm in the assault. This was the RPK, the *Ruchnoy Pulemyot Kalashnikova* – or Kalashnikov handheld machine gun.

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An African infantryman cleans his Chinese-made Type 56 (AKM) assault rifle. Note the partly folded spike bayonet, unique to the Chinese-made rifles. This was developed from the folding bayonet found on the Mosin-Nagant M1944 carbine (Chinese Type 53). Chinese-made AK-type weapons are a common weapon throughout Africa, used by regular as well as irregular forces. (MSgt Michael Q.Retana/USMC)

RPK light machine gun's technical specifications

The RPK possessed a straight-line stock designed to better absorb recoil and optimized for prone firing. The non-adjustable bipod was comparatively high, forcing the gunner to expose himself more, but this was necessary to accommodate the length of the 40-round magazine. It could also take the AKM's 30-round magazine, but the primary magazine was a 75-round drum. These drums were robustly constructed but loading was a slow process, with each round being inserted into the magazine mouth, a lever on the drum's front pressed upward counterclockwise, and the next round loaded. The Chinese provided an easily and rapidly loaded 75-round drum for their Type 81 (RPK).

The barrel mating to the trunnion and related fittings were reinforced, the recoil mechanism was modified, the upper receiver cover was heavier, and other strengthening features were also incorporated. Nevertheless, a considerable number of parts were interchangeable between the AKM and RPK. It retained the same 1,000m rear sight as the AKM, but added windage adjustment lacking on assault rifles. The RPK lacked a bayonet mounting and any form of compensator. It did not have a quick-change barrel, but the barrel was slightly heavier (thicker) than the AKM's. A distinct benefit was that a soldier able to operate an AKM required little additional training on the RPK. Iraq made a version called the Al Quds, named after the AD 621 battle in Jerusalem.

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AK grenade launchers

A number of types of grenade launchers were used by some countries on their Kalashnikov rifles.

The Soviet 40mm GP-25 *Kostor* under-barrel grenade launcher (*Granatomyot Podstvolnyj*) was adopted in 1978 for mounting on the AKM and AK-74 as well as most variants. A lighter, simplified version, the GP-30 *Obuvka*, was adopted in 1989. These muzzle-loading launchers fired the various VOG-25 high-explosive-fragmentation grenades* to 400m, but had an effective range of 150m. Both models had a 205mm barrel and weighed 1.5kg and 1.3kg, respectively.

The Hungarian AMP-69 grenade-launching rifle of 1969 had an integral spigot-type launcher. It included an optical grenade sight and a special recoil-absorbing stock and forearm. Poland used the LON-1 spigot-type launcher fitted on the grenade-launching PMK-DGN-60 rifle. It was used earlier on the standard PMK (AK-47) from 1960. It was provided with a detachable recoil boot on the butt. Yugoslavia also used a spigot-type launcher that could be fitted on most of its AK variants, including the M64A and M70. These had heavier receivers and larger trunnions to withstand the additional recoil, and were fitted with a grenade sight that folded over the front portion of the gas cylinder. The Albanians fielded a spigot-type launcher (designation unknown) unique in that the 178mm-long launcher sleeved over a barrel extension beyond the front sight. China designed the Type 81 rifle's barrel to launch grenades. The East German People's Police used a 58mm cup-type launcher that screwed on the muzzle of MPiKs (AK-47) and MPiKMs (AKM).

Poland introduced the 40mm wz.1974 under-barrel grenade launcher, also known as the Pallard. Its 267mm barrel was breech-loaded and had a large tangent-type sight fitted to the left side of the muzzle. Its overall length was 324mm and it weighed 1.25kg. It could be mounted on the PMKM (AKM). It could also be mounted on the PMKS, but its folding stock could not be completely closed. Its 40mm rounds were similar to US grenades, but the Pallard could not fire US or Russian 40mm grenades.

Another under-barrel launcher was the Romanian AG-40 Model 80. It could be mounted on the AIMS-74 rifle, but the lower forearm with a pistol grip had to be replaced with a special forearm without a grip. It fired both the Romanian 40x47mm grenade and the US/NATO 40x46mm.

* Soviet/Russian 40mm grenade rounds are not interchangeable with Western 40x46mm grenades.

BELOW This well-used AKM with its finish worn off is fitted with a 40mm GP-25 *Kostor* ("Bonfire") grenade launcher. The rifle has a modern fiberglass magazine. (© MORTEZA NIKOUBAZL/Reuters/Corbis)

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A US soldier in Iraq covers his comrade as they search a building with an RPK light machine gun. There were numerous instances in which US troops used AK-type weapons. The 7.62mm RPK proved to be a light and handy squad automatic weapon, providing better penetration than the 5.56mm M249. Note the 40-round magazine. (Tom Lamelin)

RPK and RPKS light machine gun characteristics

	RPK	RPKS
Caliber	7.62x39mm	7.62x39mm
Overall length	1040mm (40.9in)	1040mm (40.9in)
Length w/stock folded		820mm (32.3in)
Barrel length	590mm (23.2in)	590mm (23.2in)
Weight w/o magazine	4.8kg (10.6lb)	5.1kg (11lb)
Magazines	40-rd curved & 75-rd drum magazines	
Cyclic rate	600rpm	600rpm

The RPKS was the paratrooper's version with a unique folding wooden stock of the same shape as the standard butt. It was secured by a heavy-duty latch and folded to the left side. To unlock the extended stock and fold it a bullet tip was inserted in a small hole on the rear right side of the receiver. The weapon could be fired with the stock folded, but this was awkward to do.

FURTHER AMMUNITION DEVELOPMENTS

From the early 1960s onwards the Soviet Army began looking into smaller-caliber ammunition. In part influenced by the US 5.56mm round used in the M16 rifle during Vietnam and increasingly employed by the US and other countries afterwards, the Soviets designed an entirely new round which could be used in a new generation of assault rifles. The design of the round was developed at the Soviet Central Scientific Research Institute of Precision Engineering and overseen by Victor Sabelnikov. Kalashnikov himself initially opposed the smaller caliber, preferring to improve the 7.62mm. However, the often clean wounds caused by the 7.62mm were not perceived as destructive enough. The reports on the extensive damage caused by the 5.56mm in Vietnam caught the attention of Soviet designers.

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The result was the 5.45x39mm, which used a .220cal 3.6g bullet. The head of the cartridge case was slightly smaller than the 7.62x39mm, 10mm as opposed to 11.35mm, but the overall length of the two rounds was the same to prevent major design changes in the weapon's action. It was the 5.45mm's 5N7 bullet that made the new round more than just another cartridge. This bullet created a great deal of controversy when its design was discovered in 1980. It had a conventional full metal jacket with a boat tail base and open base exposing the core. The 15mm-long core was made of mild steel in a thin lead sheath, which extended over the core's blunt nose to form a 3mm-long lead slug. Ahead of this was a 5mm-long air space in the nose. This did not constitute a hollow-point bullet, but made the bullet base heavy. The 5N7 ball achieved a muzzle velocity of 915m/s (3,000fps) and 1,342 joules (990 ft lbs) of muzzle energy.

When the 5.45mm air space bullet impacted it easily yawed or tumbled creating large cavities and inflicting significant damage to soft tissue and organs. This was caused by a shifting to one side of the lead slug and the occasional deformation of the nose. Owing to the extensive internal damage, such wounds, if not treated quickly, were highly prone to infection. Wounded *mujahideen* in Afghanistan, often untreated for days owing to the general shortage of antibiotics, found that infections including gangrene quickly developed. This led to their mistaken belief that the infections were caused by "poison bullets."

The rounds were later improved. The 7N6 bullet of 1987 had a harder steel core for better penetration, but retained the nose air space. The 7N10 was introduced in 1992 with a longer steel core as the lead slug was eliminated, but the air space was retained. In 1994 the 7N10 was fielded with the air space filled with lead. In 1998 the 7N22 armor-piercing round was introduced with a hardened steel core. This was soon followed by the 7N24 armor-piercing round with a pointed carbide steel core which further improved penetration. Instead of aiming to create disabling wounds, these new rounds were designed to improve penetration through body armor, helmets, and light cover materials. 5.45mm red (not green) tracer rounds have a 800m burnout. Most 5.45mm cases are olive drab-lacquered steel. It was at first incorrectly called "5.45x40mm" and is now known as 5.45mm Russian or Soviet and 5.45mm AK-74 or M74. It held the distinction of being

5.45x39mm cartridges

Type	Identification
Ball 5N7	plain bullet, no mouth band
Ball 7N6	plain bullet, red mouth band
Ball 7N10	plain bullet, purple mouth band
AP 7N22 & 7N24	black tip, red mouth band
Tracer 7T3 & 7T3M	green tip
Subsonic 7U1	black tip, green band
Blank 7H3 & 7H3M	rosette crimp
Dummy 7H4	longitudinal crimps in case

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the smallest standard military combat caliber until Germany introduced the 4.6x30mm (.177cal) for use in its MP7 personal defense weapon.

The 7.62mm ammunition is issued in ten-round loading clips[4] or loose in cartons. These are packed in olive drab metal rolled-edge, rounded-corner "sardine cans" introduced in 1959 containing 660 rounds in cartons or 460 rounds in clips. Two cans are packed in a wooden crate. The 5.45mm is issued in 30-round cartons packed in 1,080-round cans. It is also issued in 15-round stripper clips.[5]

The attempts to market sporting Kalashnikov system rifles resulted in the development of the 5.6x39mm, a 7.62x39mm necked down to .220cal for small game. In the US it is known as the .220 Russian.

AK-74 ASSAULT RIFLE DEVELOPMENT

By the mid-1960s the 5.45x39mm round had been perfected. The new round was intended to be lighter, allowing more ammunition to be carried, and to improve accuracy and lethality. It was also more controllable during full-automatic fire. But the effective range was reduced slightly and the smaller-caliber barrel was prone to retaining water. In 1966 the requirements for new weapons to fire it were issued to design bureaus. Weapons trials commenced in 1967 with a number of innovative designs submitted. Many possessed a "balance action" – a system in which a mass counter-recoiled with the bolt to minimize recoil. This added complexity, cost, and weight to the weapon and additional developmental time would be required to perfect the designs. The two leading contenders were the Kolstantinov SA-006 with a balanced action, and the Kalashnikov A-3, essentially a modified and upgraded AKM. It was developed by the A.D. Kryakushin design team, but advised by Kalashnikov himself.

The SA-006 proved to be more accurate than the A-3, but the more conventional Kalashnikov was chosen as it would not experience extensive teething problems, was lighter, less costly, could be manufactured on existing production lines, and required virtually no additional training for troops familiar with the AKM and RPK.[6] Once selected the A-3 underwent additional development to incorporate the new features and materials, and was subjected to extensive troop trials.

Many additional refinements, mechanical and ergonomic, and modern materials were incorporated into the design of what would become the 5.45mm *Avtomat Kalashnikova obraztsa* 1974 *goda* – Automatic Kalashnikov Model 1974 year. The AK-74 began to be widely issued in the

[4] The stripper clips were for the SKS carbine and cannot be loaded into AK magazines unless stripped off and loaded singly. However, China makes an adapter to load AK magazines from SKS clips.

[5] Loading adapters are provided for loading AK-74 magazines with stripper clips, a concept borrowed from the US M16.

[6] Soviet/Russian equipment design philosophy preferred new weapons that operated similarly to earlier models so that mobilized reservists could quickly learn to operate new models. For example, reservists trained on the AK-47 or AKM could transition to the AK-74 with just a few hours' training.

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ABOVE
The AK-74 rifle is a development of the celebrated AK-47. The introduction of the M16 rifle into American service, chambered for a high-velocity, small-calibre cartridge, prompted the USSR to develop an equivalent weapon system. The AK-74 was first used in combat during the Soviet invasion of Afghanistan and an updated version, the AK-74M, remains the standard service rifle of the Russian Army. Versions of the AK-74 were also produced in other Warsaw Pact states. This particular rifle is of Bulgarian manufacture. (IWM FIR 6439)

RIGHT
Soviet naval infantrymen armed with the AK-74 assault rifle, during a demonstration for visiting US Navy personnel, 1990. Note the 6H4 bayonet attached. (PHCS Mitchell/US Navy)

late 1970s to priority units and it saw its first combat in Afghanistan at the end of 1979.

A number of AK-74 variants were fielded to include the AKS-74 folding-stock paratrooper's model designed by N.A. Bezborodov and Kalashnikov, AKS-74U "Krinkov" submachine gun (U = *Ukorochennyj*, or shortened) developed by the S.N. Furman team, and RPK-74 and RPKS-74 light machine guns. "Krinkov" is a common nickname in the West and believed to be derived from the Afghani *mujahideen* nickname. Russian nicknames include "Ksyukha" (variation of a Russian female name), "Okurok" (cigarette stub), or "Sutchka" (little bitch).

In 1991 the AK-74M was adopted with an improved folding stock and other refinements. It is issued mainly to motor rifle (mechanized infantry) units owning to the extremely cramped space in BMP infantry fighting vehicles. Issue, however, has been limited due to budget cuts. The AK-74N has mountings for night vision sights and dates from 1974. In 1976 a plan was implemented to replace all AK-47s and AKMs in the Soviet armed forces and paramilitary forces with the AK-74. At the time NATO Intelligence was surprised as it had assessed that the AK-74 would be issued only to the paratroopers, *Spetsnaz*, and other special units.

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Russian paratroopers during the military parade dedicated to the 60th Anniversary of Victory in the Great Patriotic War, armed with 5.45mm AK-74M assault rifles. This latest military issue version has a side-folding stock. (ITAR-TASS)

The AK-74's technical specifications

The AK-74 was outwardly similar to the AKM, but had an overall more modern "black rifle" appearance. The first AK-74s had wooden butts and forearms with plastic pistol grips, but soon plum-colored synthetic furniture was fitted. This was not conducive to camouflage and later AK-74s were given black polymer furniture. A groove was cut in both sides of the butt for weight reduction; it also allowed the weapon to be identified at night as a 5.45mm weapon and so prevent 7.62mm magazines from being loaded. The bolt head and extractor were improved. The rear sight was still graduated to 1,000m even though the rifle's range was reduced to 500–600m. One of the most notable features was the large compensator and flash suppressor, which made the weapon more stable during automatic firing. The compensator reduced recoil to half that of the M16 and two-thirds less than the AKM. The suppressor and bayonet lugs were designed to accommodate existing bayonets. The standard magazine was a 30-round one made of orange or black fiberglass plastic.

While very similar in size, 7.62mm and 5.45mm magazines were not interchangeable as the latter's cartridge cases were smaller in diameter; the wrong magazine could fit part-way in, but not lock properly. Tan- or rust-colored magazines were used initially, but black magazines were later introduced. The magazines were made of fiberglass-reinforced polyethylene with steel components. The tan magazines had smooth sides and the black had three reinforcing ridges. The AK-74M of 1991 had a solid black polyamide plastic stock that folded to the left side and could be fired folded. It also had an optical sight mounting rail on the left side of the receiver plus other small refinements that eased production. The AK-74N had a mounting rail for the 1PN34 night vision sight. There was also an AK-74N3 capable of mounting the 1PN51 night sight.

The paratrooper's AKS-74 had a very different type of folding stock than the under-fold type used on earlier AKs. It was a triangular-shaped

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THE WARSAW PACT AK VARIANTS

(1) Hungarian 7.62mm AMP-69 was a refinement of the AMD-63, a modified AKM. The AMP-69 was fitted with an integral spigot-type grenade launcher.

(2) Romanian 7.62mm AIMS was a modified AIM, an AKM variant. It had the AKMS's folding stock and an unusual forward pistol grip.

(3) Polish 7.62mm PMKM was a modified AKM and could mount the 40mm Kbk-g Wz 1974 grenade launcher, which required a modified forearm.

(4) East German 5.45mm MPi-AKS-74NK of 1987 was a shortened barrel version of the MPi-AKS-74N assault rifle.

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stamped steel skeleton design that more closely resembled a normal butt stock. It folded to the left side and could be comfortably fired folded.

The AKS-74U shortened submachine gun adopted in 1979 is issued mainly to line unit officers, as on-board vehicle and helicopter crew armament; in addition it is widely used by *Spetsnaz*, Federal Security Service (the Russian successor to the Soviet-era KGB), and counterterrorist units. It has a shortened forearm and barrel fitted with a cylindrical and cone-shaped flash suppressor, which also serves as a gas expansion chamber helping the shortened weapon's gas system function. The front sight is shorter and rather than a tangent sight it has a small flip-type "L" rear sight protected by ears. It provides only two range settings, battle sight zero (300m) and an optimistic 400–500m. Accuracy beyond 200m is questionable. It uses the AKS-74's folding skeleton butt stock.

A light machine gun version of the AK-74 was fielded as the RPK-74. It was basically an AK-74 with enhancements and modifications making it comparable to the original AKM-based RPK. Unlike the 7.62mm RPK, the RPK-74 had a small slotted "birdcage" flash suppressor. The RPKS-74 had the same side-folding stock as the RPKS. The RPK-74N and RPKS-74N mounted a 1PN58 night vision sight.

AK-74 and AKS-74 assault rifles and AKS-74U submachine gun characteristics

	AK-74	AKS-74	AKS-74U
Caliber	5.45x39mm	5.45x39mm	5.45x39mm
Overall length	940mm (37.0in)	956mm (37.63in)	726mm (28.58in)
Length w/stock folded		718mm (28.26in)	488mm (19.21in)
Barrel length*	475mm (18.70in)	475mm (18.70in)	270mm (10.62in)
Weight w/o magazine	3.415kg (7.52lb)	3.450kg (7.60lb)	2.730kg (6.01lb)
Magazine	30-rd curved	30-rd curved	30-rd curved
Cyclic rate	650rpm	650rpm	800rpm

* Length includes the large flash suppressor.

See page 70 for AK-74M characteristics.

A 5.45mm AKS-74U "Krinkov" submachine gun, a much modified version of the AK-74 assault rifle, which was introduced in 1979.

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RPK-74 and RPKS-74 light machine gun characteristics

	RPK-74	RPKS-74
Caliber	5.45x39mm	5.45x39mm
Overall length	1060mm (41.73in)	1040mm (41.73in)
Length w/stock folded		845mm (33.26in)
Barrel length	590mm (23.2in)	590mm (23.2in)
Weight w/o magazine	5kg (11.02lb)	5.15kg (11.35lb)
Magazine	45-rd curved	45-rd curved
Cyclic rate	600rpm	600rpm

AK-100-SERIES ASSAULT RIFLES

In the early 1990s the Izhevsk Mechanical Works (IZHMASH) assessed that there was a worldwide commercial market for improved AK-type weapons. It formed the Kalashnikov Joint Stock Company to market AKs, using Kalashnikov's drawing power as honorary president. IZHMASH reasoned that some users would rather replace their worn AKs with improved models at a lower cost than if they were to acquire weapons from Western, Chinese, or other arms merchants. Many foreign-made AKMs and other models were being sold worldwide and were often of poor quality, if not already used. Additionally, the original suppliers seldom had a viable support infrastructure to provide replacement parts and rebuild services. It was reasoned too that users would prefer to replace old AKs with new ones rather than with M16s or other Western weapons, as this would require no additional training. The new weapons would be offered in three calibers, the old standby Soviet 7.62x39mm of which some countries held huge stocks, the 5.45x39mm used in the AK-74, and the US/NATO 5.56x45mm (5.56mm HATO in Russian); again some countries were well-stocked with this round as they had already been using M16s. It must be pointed out that the AK-100-series is *not* used by the Russian armed forces.

The AK-100-series or AK-10X was based on the AK-74 with minor upgrades and was introduced in 1994. The furniture consisted of plastics and a rail was mounted on the left side for night vision, optical, and collimating sights. The solid plastic stocks could be folded to the left side. Two versions, the 3.8kg AK-101 (5.56mm) and -103 (7.62mm), are full-barrel length (415mm) assault rifles like the AK-74. They are 943mm in length – 700mm with the stock folded. The 3.4kg AK-102 (5.56mm), -104 (7.62mm), and -105 (5.45mm) have intermediate-length (314mm) barrels, longer than the AKS-74U's short barrel. Overall length is 824mm – 586mm with folded stock. On these the front sight is mounted on the forward end of the gas cylinder with an AKS-74U-type flash suppressor and gas expansion chamber. The AK-101 and 103 possess AK-74-type flash suppressors. All versions have 30-round black polyamide plastic magazines, which are not interchangeable among the three calibers. The

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The 7.62mm AK-103, intended for foreign sales, is based on the AK-74. The 5.56mm AK-101 is identical in appearance. Note the near-vertical gas port connection at the forward end of the gas cylinder. The AK-74's is angled more forward. The AK-100-series was introduced in 1994.

5.45mm magazines are noticeably straighter than the curved 7.62mm and 5.45mm. There are no RPK-type light machine guns or AKS-74U-type submachine gun variants in the AK-100-series.

Export sales proved to be dismal and large numbers are currently warehoused, but there is little doubt that sooner or later they will make their way into the hands of eager users somewhere in the world. The marketing plan failed because former Warsaw Pact countries, now members of or vying to become members of NATO, had upgraded their own AK plants. The market was already flooded with long-lasting AKs and there was little interest in 5.45mm and 5.56mm models. The Russians had better fortune licensing the manufacture of 7.62mm AK-103s and selling complete factories, including ammunition production equipment. Ethiopia, India, and Venezuela have all subsequently established or are building plants. Additionally, Venezuela purchased 100,000 AK-103 rifles and 5,000 AK-104 shortened rifles which were delivered in 2006, and opened its own plant, *Compania Anonima Venezolana de Industrias Militares* (Anonymous Venezuelan Company of Military Industries), in 2010 with plans to produce up to 50,000 a year, far more than needed by its armed forces – 32,000 regular troops and 30,000 National Guard. As a result, many believe that a new wave of AKs will flood through Latin America in coming years.

Further, in late 2009 Rosoboronexport, the Russian arms export firm, reported that ten other countries have applied for AK-100 plants. They remain unidentified, but are mostly in Latin America and the Middle East. But this will not occur anytime soon. Indeed, it required six years of negotiations, preparation, construction, and personnel training before Venezuela's plant opened.

A 7.62mm AK-103 with its black plastic stock folded to the left side. This series of export weapons is intended for both conventional troops and paratroopers.

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In the early 1970s, the AL-7 was developed, a 5.45mm modified AKM. It used the counter-recoil system developed in the mid-1960s. The system is based on a counter-recoiling weight that slides forward when a round is fired to damp the recoil. But it was too expensive and too heavy, and required too many changes to production lines. The AK-74 was adopted instead. The counter-recoil or balanced system has been incorporated into the new commercial 5.45mm AK-107 and 5.56mm AK-108. No sales have been made so far as is known.

In May 2010 IZHMASH announced an improved version of the AK-74M, the AK-200-series, which would be tested in 2011. This commercial venture will incorporate further refinements, including slightly reduced weight, and will provide 30-, 50-, and 60-round magazines. It is expected to be available in 7.62x39mm, 5.45x39mm, and 5.56x45mm plus different versions including full-size rifles, shortened rifles, and submachine guns.

A final commercial AK variant was the Saiga (named after an unusually ugly endangered steppe antelope) semi-automatic hunting rifle available in .30-06 (aka 7.62x63mm), 7.62x51mm NATO (aka .308 Winchester), 5.6x39mm (aka .220 Russian), 5.56x45mm NATO (aka .223 Remington), and 5.45x39mm plus the Saiga 12 12-gauge shotgun, also based on the Kalashnikov design. They came with 3-, 5-, 7-, and 10-round magazines depending on the model. These hunting arms had a mildly military look and were not commercially successful.

Venezuelan paratroopers of *42° Brigada de Infantería Paracaidista* armed with 7.62mm AK-103 assault rifles with bayonets fixed. These are Russian production models delivered in 2006 rather than Venezuela-produced models, of which production began in 2010.

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OTHER KALASHNIKOV-BASED WEAPONS

As the Kalashnikov system proved adaptable to weapons other than assault rifles it was not long before this proven and rugged design was incorporated into other weapons. Other than RPG-7 antitank projectors and Makarov 9mm PM pistols, all weapons assigned to Russian rifle platoons are Kalashnikov designs.

The most notable of these are the PK and PKM machine guns, *Pulemyot Kalashnikova Modernizirovanniy*, or Kalashnikov machinegun modernized. These are belt-fed general-purpose machine guns that can be fired underarm or from its bipod or a tripod. It fires the rifle-caliber 7.62x54mmR round, demonstrating that the Kalashnikov system can handle higher powered ammunition. The PK weighs in at 9kg and the PKM at 7.5kg, making it lighter than comparable Western weapons. The PK was introduced in 1961 and the PKM in 1969. The PKT and PKB are mounted in armored fighting vehicles and the latter is also used on helicopters.

Another use of the Kalashnikov action is the telescope-equipped SVD sniper rifle, the *Snayperskaya Vintovka Dragunova* – sniper rifle Dragunov. Although developed by the Yevegeny Dragunov design team, the action was based on the AK's. The ten-round magazine-fed 7.62x54mmR rifle was adopted in 1963.

A similar weapon is the Romanian 7.62x54mmR PSL semi-automatic sniper rifle (*Pusca Semiautomata cu Lunet*) more commonly known as the FPK. While similar to the SVD, it is actually based on the RPK.

There are scores of variants of Kalashnikov assault rifles made in dozens of countries, far too numerous to address here. They all owe their roots to Mikhail Kalashnikov's AK-47. Many are clones of varying quality ranging from finely engineered weapons to pieces of questionable workmanship. Some countries developed their own upgraded versions resulting in virtually new weapons, for example, the Israeli Galil ARM, South African Vektor R-5, and Finnish Valmet RKm62-series. Semi-automatic versions are produced by some countries for commercial sales. Countries producing AK variants include: Albania, Bulgaria, China, East Germany, Egypt, Ethiopia, Finland, Hungary, India, Iraq, Iran, Israel, Nigeria, North Korea, Pakistan, Poland, Romania, Serbia, South Africa, Sudan, Vietnam, Venezuela, and Yugoslavia.

Bulgaria, China, East Germany, Poland, Romania, and Venezuela also produced AK-74-type rifles. Some have been converted to 5.56mm NATO.

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USE

The Cold War turns hot

The AK has been used the world over in all forms of warfare, climate, and terrain. It may be an individual weapon, but its exact methods of employment varied according to battlefield conditions and the imaginations of its users.

OPERATING AND FIRING THE AK

Operating the AK is extremely simple. With the weapon on safe (although it can be loaded with the selector lever in any position), a loaded magazine is inserted into the magazine well, canting it forward so the lug on the magazine's top front engages with the recess in the magazine well. Once engaged the magazine is swung rearward until the catch snaps into place.

When ready to fire the selector lever on the right side is moved down one notch for full-automatic and two notches for semi-automatic. This is the opposite of the M16's left-side selector on which the lever's first position is semi-automatic and the second is full-automatic. This difference demonstrates the two contrasting philosophies for each weapon's employment. The Soviets believed in overwhelming automatic firepower in the close assault. Accuracy was not a concern. The US and many other countries desired accurate fire at longer ranges, with full-automatic fire available as a backup when necessary.

The weapon should be kept on safe when it is not necessary to fire immediately. With the selector lever in the uppermost safe position, the bolt can be pulled 30mm to the rear, but no further, to see if a round is chambered.

To aim the AK the tip of the front sight post is placed on the desired point of impact on the target and the top edge of the rear sight slide is

OPPOSITE
Palestinian militants train in Southern Gaza in 2003, armed with AK-47S folding stock assault rifles. (© Howard Davies/Corbis)

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aligned horizontally with the top of the front sight post. The forearm is gripped tightly with the left hand and the pistol grip with the right. The butt is pulled firmly into the hollow of the right shoulder. That said, the AK can be fired from the left shoulder (the ejection port is far enough forward that ejected cases are in no danger of striking the firer's face if fired from the left shoulder), although the Soviet and now the Russian Army teaches all soldiers to fire from the right. Ejection is very strong with the cases kicked well upward and many feet to the right. Rather than gripping the forearm as recommended, some prefer to grip the magazine. On most weapons this is not recommended because of relatively weak magazine latches, but the AK's is robust and can handle it. The Soviet/Russian Army even permits this as an alternative. The heavy magazine locks so securely that it causes no problems to tape a second magazine to it, again something not recommended for many weapons. For the RPK it was intended for the left hand to grip the forward curve of the butt stock and pull it into the shoulder when in the prone position. Although the small of the stock can be gripped by the left hand, many simply grip the forearm.

To set the rear sight for a desired range the detent buttons are pressed in on both sides of the sight bar with the thumb and forefinger and the bar slid to the desired range with its forward edge on the appropriate range line. The engraved range numbers and lines are usually painted white to make them more visible. To set it on battle sight zero the sight bar is pulled all the way to the rear to the line marked П (P) – other countries use different letters – and the zero is automatically set for 300m. There is no rear sight windage adjustment. When zeroing the weapon the front sight can be vertically adjusted using the cleaning kit wrench. Turning the sight post clockwise lowers it and counterclockwise raises it. Minimal adjustments for windage can be made using a special drift tool held by armorers. Once the zero is set on the front sight it is not readjusted in the field.

A East German National People's Army officer corrects a *Schütze* (rifleman) armed with a MPi-KM (*Maschinenpistole-Kalashnikov modernisiert*) version of the AKM. The stock and pistol grip are dark brown plastic and the former is beaded to allow for a firmer grip on the otherwise slick stock. In the background is an IMGK (*leichtes Maschinengewehr Kalashnikov*), their version of the RPK.

The AK can be fired in the standing, kneeling, sitting, squatting, and prone positions as well as from any supported position such as the edge of a fighting position, window, personnel carrier, wall, log, and so on. Assault firing is conducted on the move with the butt clamped under the armpit or against the waist by the elbow.

The weapon is cocked after placing the selector on the desired mode of fire by pulling the operating handle on the right side sharply to the rear and letting it snap forward to chamber a round, without allowing the handle to ride forward. This is typically done with the right hand while the left grips the forearm. It is

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An officer in Afghanistan demonstrates the proper firing position with an AKS-47 folding stock assault rifle. Assuming a proper cheek weld in order to achieve good eye alignment with the sights is more difficult with the steel frame stock than with a wooden stock. (US Army)

common to grasp the pistol grip with the right hand, reach over the top of the weapon with the left, and pull the operating handle back. Both are acceptable and one is no faster than the other.

The selector lever is set on the desired mode of fire. A design flaw is that switching the selector lever makes a distinct audible click and it can be stiff to move. The trigger should be pressed firmly and evenly, never jerked. The weapon fires from a closed bolt so there is no "slam" of the bolt running forward when the trigger is pressed. The firing report is a sharp crack and the recoil is moderate. On full-automatic, short 3–5-round bursts are fired, with the weapon brought back on to target after each burst. There is an appreciable muzzle climb; while not drastic, it does cause wide bullet dispersion. Firing full-automatic at a man-sized point target at over 100m is generally futile.

When the magazine is empty the bolt remains in the closed position. It cannot be locked to the rear. The magazine is then removed by pressing the catch and rotating it forward out of the well.

It is preferable for automatic weapons to fire from the open bolt and for the bolt to remain open between bursts and after the last round. This helps cool the weapon and prevent cook-offs (unintended discharges caused by excessive heat). Although the Kalashnikov PK machine gun does fire from an open bolt, the advantages of the AK's closed bolt are that there is no movement of working parts to inhibit accuracy for the first shot and that it prevents foreign debris from entering the ejection port

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An East German sergeant coaches a recruit firing an MPi-K (AK-47). A mirror device is slipped on to the top of the rifle behind the rear sight, allowing the coach to see the sight picture the recruit sees. The small tripod supports are used to provide a steady base when zeroing the rifle. This is actually a posed photograph as they are not live firing for zero. All of the rifles have aluminum-colored blank firing attachments screwed on the muzzle, which replace the muzzle cap.

Taiseir, a veteran of the Popular Front for the Liberation of Palestine, reassembles a Kalashnikov assault rifle in Jordan early in 1969. (Library of Congress/*Look* Magazine Photograph Collection)

when the weapon is not being fired. It is argued that the RPK light machine gun would provide more effective sustained fire if it had an open bolt as it very rapidly overheats.

To disassemble the AKM and most variants the magazine is removed and the chamber cleared. The selector lever is placed on full- or semi-automatic. The operating handle is then retracted and the hammer cocked. The recoil spring guide (a small square button on the rear of the upper receiver cover) is depressed, and the cover removed by pulling up on the back end. The recoil spring guide is pushed forward and pulled out. The bolt carrier is pulled back and removed, and the takedown latch is rotated upward on the right side of the rear sight base. The upper hand guard is pulled rearward and the rear end raised. The lock lever on the front end of the hand guard is raised and pulled forward while being pushed downward. The bolt is removed from the bolt carrier by sliding it off.

FIELDING THE AK-47

Production of the AK-47 began slowly, with only 8,000 produced in 1949. Production rapidly picked up, but widespread distribution did not occur until 1956 and it was not until the early 1960s that most mainline units had received the revolutionary weapon.

AK-47 issue was initially uneven. There were units with mixed AK-47s and SKS carbines and even units

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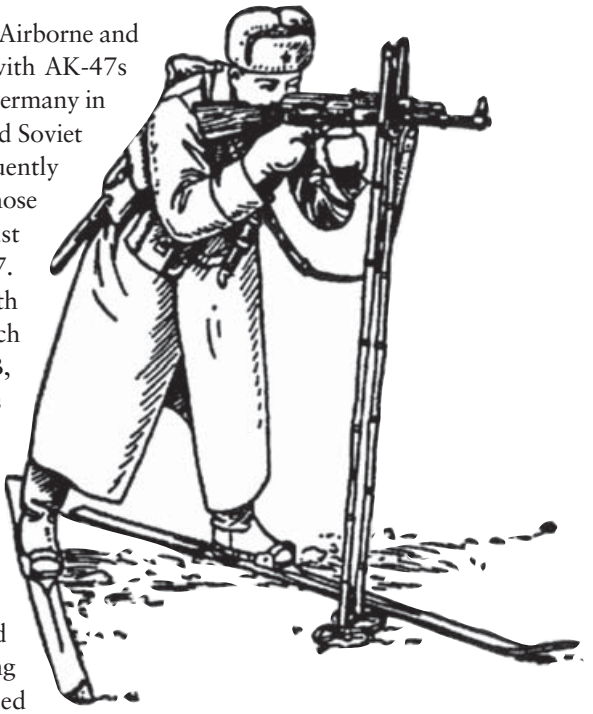
with bolt-action Mosin-Nagant rifles and AK-47s. Airborne and *Spetsnaz* units were the first to be fully armed with AK-47s followed by the divisions in Group Soviet Forces Germany in East Germany and then by other forward-deployed Soviet forces in other Warsaw Pact countries. Subsequently follow-on forces in the western military districts, those around Moscow, and then those in the Far East facing China eventually received the AK-47. Maneuver units within divisions were armed with the AK-47 first, followed by support units, which often retained SKSs for some time. The KGB, Border Troops, and Ministry of Internal Affairs (MVD) security troops followed. Warsaw Pact forces mostly began receiving their own AK-47s in the early 1960s.



There are numerous prescribed firing positions for the AK: standing, standing supported, kneeling, sitting, prone, from various types of vehicles, and moving assault positions. There are even positions for accommodating firing from snow skies, here using the ski poles for support.

At the time, the West often downplayed the significance of the AK-47's introduction, especially since its widespread distribution was initially slow. It was assessed that squads would have a mix of AK-47s and SKSs rather than going solely to the AK-47. It was all too often criticized for possessing a low-powered cartridge, for being too short-ranged, and for abandoning accuracy for ammunition-wasting automatic fire. At the same time NATO and many other countries were fielding semi-automatic rifles with the full-power 7.62x51mm NATO round, mainly the Belgium FN FAL rifle, which was being adopted by many Third World countries as well. The US was also fielding the semi-automatic M14 rifle in the same caliber.[7]

Two tactical concepts were at play. The Soviets relied on a high volume of short-ranged fire backed by longer-ranged automatic weapons and other crew-served weapons. The West mostly retained the idea of engaging targets at the longest practical ranges with accurate fire. Automatic weapons were to supplement this fire. Both concepts have their pros and cons. Neither by itself is ideal. There was little doubt by anyone making a realistic assessment, irrespective of official policy, that close-range fights with Warsaw Pact troops would entail a great deal of incoming fire.

In addition, the AK's ease of operation and disassembly/assembly was beneficial as the Soviet Army was comprised of over 80 ethnic groups, many of whom could not speak Russian and were functionally illiterate.

While the SKS saw very limited use in the Korean War, the AK-47, while available, did not. The Soviets kept it secret. It was not until the Hungarian Revolution (October 23–November 10, 1956) that the AK-47 was revealed, when on November 4 repressive Soviet troops entered Hungary from the USSR.

[7] These weapons, as well as the later German HK G3 used by many countries, were capable of full-automatic fire, but most issued were semi-automatic only and were virtually impossible to control in full-automatic.

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A serious young Afghan *mujahid* displays his AKM. In many warrior societies it is a sign of reaching adulthood for teenaged boys to be given a weapon, and more often than not it is an AK. (© Pascal Manoukian/Sygma/Corbis)

THE "ANTI-IMPERIALIST GUN"

Armies armed with advanced weaponry, supersonic aircraft, sophisticated communications, and intelligence collection assets have been brought to heel by dedicated or fanatical opponents armed with nothing more than the AK-47 and the RPG-7. The AK's low recoil made it easier to train both soldiers and inexperienced civilians quickly, including women and children. An inexperienced person could be trained to operate it in an hour; he or she would not be as proficient as a highly trained soldier, but enough motivated fighters with AKs can inflict a great deal of damage.

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Of course the Cold War never did turn hot for America and the USSR. Exactly one American soldier was killed by a Soviet soldier armed with an AK-74. This was Major Arthur Nicholson of the US Military Liaison Mission, killed while he attempted to examine a Soviet tank shed in East Germany on March 24, 1985. He was the last US casualty of the Cold War. The final casualty of the Cold War killed by an AK was Chris Gueffroy, shot by East German Frontier Troops as he attempted to cross the Berlin Wall on February 6, 1989.

In the many wars, insurrections, revolts, and innumerable conflicts of the post-Cold War world, hundreds of thousands have died via the muzzle of Mikhail Kalashnikov's *avtomat*. Originally the USSR had not planned to give away AK-47s without reimbursement. Although it has been made in over 20 countries, outside the Warsaw Pact only China, Turkey, and Slovakia paid royalties. Most countries simply reverse-engineered the weapon and commenced production; this often included ammunition as well.

Nonetheless, the USSR found it beneficial to provide the AK-47 and other arms to those willing to confront Western forces even if there was no direct monetary gain. The so-called "anti-imperialist gun" armed the surrogate forces of the Soviet Union's fraternal allies. As a result, the AK spread across the world, especially in the Middle East, Asia, Africa, and Latin America. Other Warsaw Pact states contributed AKs and other arms to this end and China pursued its own agenda, backed by the provision of weapons, including the Type 56 AK.

In many cases throughout the world an individual's act of swearing alliance to a regime, an insurgency, a warlord, drug lord, or crime band was rewarded and solidified by bestowing an AK. Even in the 21st century, in many developing countries, especially those with a tribal or clan culture, a young man's purchase or presentation of an AK-47 means his attainment of manhood. The AK-47 has become as much a symbol of the modern warrior as the bestowal of a spear, shield or headdress, ritual scars or tattoos, or the growth of a beard. It has not necessarily replaced those trappings and rituals, but it unquestionably supplements these mystical links between violence and sociability. It is not only armies, insurgents, and militias which use AKs, but bandit and kidnapping gangs, drug runners, and other crime bands.

AKs poured into Afghanistan and Pakistan owing to the Soviet support of the Afghan communist forces and to the CIA's supplying the *mujahideen* with Chinese and Polish AKs. Other countries including Egypt and Turkey also sold AKs to forces within Afghanistan. It created a "Kalashnikov culture" in which an adult male was not a man unless he possessed an AK. It was much the same in some parts of Africa where even young boys toted AKs. Al-Qaeda was still using these AKs in its 20 terrorist training camps in Afghanistan when the Taliban was driven out in 2002.

An AK smuggled into Afghanistan from China typically cost US$150 during the early 1980s. Observers have tracked the ebb and flow of events in countries in turmoil by the changing black market cost of AKs, with some arms dealers judging the stability of a country by the rise and fall of

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AKM-armed NVA troops overrun an ARVN position, whose troops were armed with M16A1 rifles. In the background a man aims an RPG-2 antitank projector. (Tom Laemlein)

the AK's price. In some parts of the world the price has risen from US$100 to US$400–500 prior to local elections, popular uprisings, or the butchery of another tribe, or on the eve of expected political changes. An example from Lebanon: just prior to the 2005 assassination of Prime Minister Rafiq Hariri, an AK cost US$300. Within weeks after his death, when street fighting had broken out, the price had doubled. A year later, when the 2006 Israel–Hezbollah War had broken out, it had tripled.

The question of how AK-47s came into the hands of their bearers is a complex one and, of course, this varies greatly between conflicts and regions. Some are captured in battle, taken from raided armories, sold on the black market, smuggled in from a supportive neighboring country, or supplied by a third player – all in addition to those purchased legitimately by a state government. Through the 1960s to the 1990s a great many were provided by the USSR, Warsaw Pact states, and China to support client states, anti-Western insurgents, and others pursuing "wars of national liberation." Arms embargos did little to curtail local and regional conflicts as by the time the situation had escalated and the United Nations attempted sanctions, the country was awash with AKs and there was no need to import more.

The first widespread use of AK-47s against US forces was in Vietnam. The North Vietnamese Army (NVA) was initially armed with the SKS carbine (Chinese Type 56) until these were turned in for AK-47s in 1967. The SKSs were subsequently transferred to the Viet Cong. Most of the AKs in NVA hands were actually Chinese-made Type 56s, but the odd Warsaw Pact variant was encountered. (Both the SKS and AK-47/AKM are designated the Type 56 in China.)

The Egyptian and Syrian armies had been armed with the AK-47 by the USSR prior to the 1967 Six Day War. The weapon performed well, but it made no difference in the face of superior Israeli tactics. The AK, now produced by Egypt, has been in the forefront of all subsequent Arab–Israeli

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conflicts, including arming the variety of Palestinian opposition groups and terrorist bands. It spread through the Middle East: not only was production undertaken by Egypt, Iran, Iraq, and Sudan, but the USSR and China also distributed copious numbers throughout the region.

Iraq began purchasing AKMs from the USSR in the mid-1970s. It also purchased Chinese Type 56s and Hungarian AK-63s as well as some Polish KbKs, East German MPi-Ks, and Romanian AIMs. In the 1980s Iraq began producing the Tabuk (named after the AD 630 expedition in present-day Saudi Arabia against the Byzantines, though historically it is believed that no such battle occurred), aided by technical assistance and parts from Yugoslavia. In fact, the Tabuk was a close copy of the Yugoslav M70. The Iraqis took cost-saving shortcuts, though; the Tabuk's bore and chamber were not chrome-plated. Coalition forces faced the many versions of AK in the Iraq wars in 1991, 2003, and beyond. Tabuk production ceased when the factory was destroyed by US bombing. When the Iraqi armed forces and police were reestablished they were armed with the AKs with which they were already familiar. Many of the available weapons were worn out and the US purchased new AKs from Bosnia, Poland, and China. In 2008 the US began rearming the new Iraqi army and police with M16A2 rifles and M4 carbines; but AKs are still in wide use by the many terrorist and resistance groups as well as militias throughout Iraq. Every family may legally own a single AK with one magazine for protection, with a police permit.

An Iraqi Shiite militiaman fires his AK-47 rifle during a gun battle with government forces in Basra's Al-Jumhuriyah neighbourhood, 2008. (Essam al-Sudani/AFP/ Getty Images)

A group of Hamer warriors patrols Lake Chew Bahir, 2001, for protection against the Boranas, their worst enemies. The menacing proliferation of Kalashnikov assault rifles imported from Sudan has worsened the scenario. The AK-47 is so widely used throughout Africa that it has become a common implement, alongside grain baskets, spears, and farm implements. (© Remi Benali/Corbis)

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The fall of the Soviet Union in 1991 did not see the end of insurgencies and regional conflicts as many had fantasized. They increased as republics splintered, nationalistic, ethnic, and cultural groups sought their freedom or to assert themselves, coups and civil wars broke out, drug cartels grew into narco-guerrilla armies, and radical terrorist groups blossomed. Rather than age and wisdom determining who tribal leaders would be, it was those with AKs who allowed radicals and criminals to take over for their own purposes.

AKs virtually became a commodity in the developing world. Millions were sold through official channels and by opportunists on the black market from the former Soviet Union. The same occurred in Hungary, Bulgaria, Romania, and splintered-off Soviet republics. AKs from Europe were funneled into unstable Africa, where growing ethnic confrontations and power struggles were brewing.

Africa was and is awash with AKs, often bought with "blood diamonds," mined in war zones and sold to support the insurgency, the invaders, or warlords. Scores of unbelievably brutal conflicts tore through the continent and the AK-47 shed blood alongside the RPG-7 and machete. The majority of central African countries saw conflicts ranging from coups to lengthy civil wars, often with one conflict ending and another emerging on its heels.

A child soldier somewhere in Africa takes a smoke break with his AKM assault rifle. Such child soldiers, while not too proficient, can be completely heartless and vicious. They may not be very well trained on their weapons, but the AK makes them deadly regardless. (© Reuters/Corbis)

The armies and bands wielding AKs were often of poor quality, mere rabble in many cases, although some were led by officers and NCOs trained by the former colonial masters or benefiting from foreign advisors. Often the weapons were never zeroed or were improperly maintained; nor were effective firing techniques taught. Gun battles frequently consisted of nothing more than seeing which side could make the most noise and shoot up the most buildings and cars. They often lacked adequate training, tactical proficiency, and fire discipline. The child soldiers were the worst, but, at pointblank ranges and lacking any sense of mercy after brutal conditioning and drug use, were brutally deadly. However, there were, of course, instances of forces that were adequately trained and led to the point where they were effective.

It is estimated that some 100,000 child soldiers between the ages of 7 and 14, including some girls, currently do battle in Africa, often being abducted children or orphans forced to fight. It is not uncommon for parents to be murdered simply to press-gang their children.

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Thousands have died in combat and from starvation, disease, and abuse. Their light, small bodies have no problem dealing with the low-recoil AK. They are either forced to fight or enticed by extravagant promises of money, cars, and toys. Many have seen their parents murdered by AK-47s. They possess youthful bravo, a sense of invincibility, and a general refusal to retreat. It is estimated that one in four African fighters is under 18 and thousands under 15, the minimum age for soldiers recognized by the Geneva Convention.

President Charles Taylor of Liberia formed Small Boys Units during the Liberian Civil Wars of 1989–96 and 1999–2003, which were organized into battalions. A witness at Taylor's war crimes trial testified, "Sometimes they were so small that when they handled guns like AK-47s, the guns would touch the ground."

The first confrontation with child soldiers that Western troops experienced was in Sierra Leone in 2000. Eleven British soldiers had been captured by West Side Boys rebels. The SAS and Paras rescued the soldiers when it was determined that they would be executed by the AK-toting kids and their commanders. One SAS trooper was lost and at least 25 of the West Side Boys killed during the successful rescue operation.

The 1955–72 and 1983–2005 Sudanese Civil Wars, 1964–79 Rhodesian Bush War, 1966–89 South African Border War with Angola, 1967–70 Nigerian–Biafran War, 1977–92 Mozambican Civil War, 1990–94 Rwandan Civil War and Genocide, 1994-onward Somali Civil War, and

Contra rebels on patrol, Nicaragua 1987. The lead man carries a 7.62mm RPK light machine gun with the bipod removed. In common with many Latin American forces, both sides of the Nicaraguan civil war were armed with AKs. (© Bill Gentile/Corbis)

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many other conflicts have seen the AK at the forefront of the battlefield. AKs still pour into the continent and the Somali pirates currently operating in the Gulf of Aden make extensive use of them.

The Russians too have had the AK turned on them in their own post-Cold War ethnic conflicts and breakaway republics' wars, including Chechnya (1994–96 and 1999–2000; still an ongoing insurgency), the South Ossetian Wars in Georgia (1991–92, 2008), and others. Then there was of course the agony of Afghanistan from 1979–89 in which AKs were the *mujahideen*'s primary individual weapon. Indeed, in a culture where ownership of a rifle was a sign of manhood, the traditional Lee Enfield and Mosin-Nagant rifles, valued for their long range, were quickly supplemented by AKs. Their full-automatic firepower, high magazine capacity, reliability, and usefulness in close-range hit-and-run attacks proved invaluable. Long gone was the long-range harassment provided by the old bolt-action rifles. An AK was especially valuable if captured from the enemy in close combat rather than one smuggled in from China.

Some regular Latin American armed forces, including Peru and Venezuela, adopted the AK to replace their FN FAL rifles dating from the late 1950s and early 1960s. Cuba did not produce AKs, but became a conduit to transfer Soviet and Warsaw Pact AKs into Latin America and Africa. AK-armed Cuban troops actively fought in Angola, but Latin America was the real focus of the Caribbean communist bastion. Cuba, backed by the USSR, supplied arms to many anti-democracy groups or states including Nicaragua and Grenada as well as to Noriega in Panama and the Farabundo Martí National Liberation Front during the 1980–92 Salvadorian Civil War. The 1979–90 Contra War against Nicaragua's Sandinistas saw wide use of AKs by both sides. Nicaragua's US-backed dictator, Somoza, overthrown by the Sandinistas in 1979, was provided with Israeli-made Galils, an AK offspring in 5.56mm, so that US ammunition could be supplied. The excellent weapon was inexpensive at US$150.

In the ongoing armed conflict in Colombia, guerrillas, terrorists, and drug cartels, especially the Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN), have heavily relied on AKs (as have the Shining Path in Peru and the drug gangs and other crime groups in Mexico and elsewhere). At the end of the 1980s the FARC purchased large numbers of AKs and ammunition from the Russian mafia and through the black market in Peru and Central America. In 2004 it was found that the FARC were running low on ammunition having purchased insufficient amounts. It is believed they replenished their stocks via Venezuela with ammunition purchased from Russia.

In Latin America Marxist ideology emphasizes equality of the sexes. Many of the soldiers comprising these insurgent and narco-guerrilla organizations are women and girls. The FARC of Colombia extensively use teen soldiers, a large percentage of whom are female. Over 11,000 youths have been estimated to be involved in Colombia's various guerrilla groups. Teenage girls experience no difficulties handling AKs. They are recruited/press-ganged from orphans, street children, and idealistic students while others are the children of serving guerrillas.

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AK-47 EMPLOYMENT

Warsaw Pact rifle squad organization and strength varied depending on country, period, and mode of transportation. The latter depended on the type of carrier, either a tracked BMP or one of the wheeled BTR variants. The squad leader and his deputy (if designated), the assistant RPG-7 gunner, the one or two assistant RPK gunners, and the one to three riflemen were all armed with AKs. The assistant RPG-7 and RPK gunners doubled as riflemen.

A squad on line, attacking or in the defense, would position the squad leader in the center with the RPG-7 and single RPK gunners on either side of him for ease of control and to allow the weapons to cover the squad frontage. If there were two RPKs they would be positioned near the flanks to provide coverage of the frontage and gaps between adjacent squads/platoons.

A Bosnian soldier, equipped with a Yugoslavian M70 with an integral spigot-type launcher, a policeman's steel helmet and a gas mask, keeps watch for enemy troops from the window of a house in the Sarajevo suburb of Dobrinja. (IWM BOS 209)

Standard procedure was to fire short full-automatic bursts in both the attack and defense. Realistically full-automatic fire at over 150m was a waste of ammunition, and experienced troops used semi-automatic at longer ranges. A basic load was four or five magazines, and soldiers were to notify their squad leader when they were down to two magazines. Most armies would use three- or four-magazine pouches; Chinese-style three-magazine chest pouches might also be used, particularly by Russian paratroopers and *Spetsnaz*.

That essentially was conventional battle theory for the employment of the AK. The reality was (and is) very different owing to variances in terrain, and in the tactics, preferences, and extent of training both of the soldiers themselves and of their enemy, as well as other intangible factors.

Most lower-level combatants, insurgents, narco-guerrillas, militiamen, terrorists, child soldiers, gangsters, and so on are not all that proficient. There are exceptions of course, but for the most part their AKs are not effectively zeroed, if at all, and their maintenance care runs from adequate to negligent. Their tactical shooting skills are often deficient. The accuracy of fire delivered by the rank-and-file is often poor, not just because of inadequate zero, but as a result of poor firing positions, pitiable sighting techniques, and undisciplined fire control. Again, exceptions will certainly be encountered.

When individuals and small elements engage bodies of troops they are often described as "snipers" when in fact they bear standard weapons rather than specialized sniper rifles and are untrained in the many skills essential for snipers. What actually occurs is that individuals acting as skirmishers are harassing patrols and small units by taking snap-shots or firing short bursts to delay and disorganize the enemy as well as inflict morale-damaging casualties. The reliable high-capacity magazine AK is ideal for this as it can be fired in single-shot or in short bursts at moderate ranges, anywhere from 50–300m. Long-ranged, telescope-mounted sniper rifles are not needed for this form of harassing tactic.

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A guerrilla soldier fires his AK-47 in defense of a remote rebel base in the Safed Koh mountains in Afghanistan, 1988. A Soviet-supported communist coup by the People's Democratic Party of Afghanistan led to the USSR's 1979 invasion of the Islamic nation, resulting in ten years of civil war between the Russian-backed government and the US-backed Afghan rebels. (Robert Nickelsberg/Liaison/Getty Images)

Some of the common mistakes encountered among the poorly trained include not setting the rear sight when firing at longer ranges, but keeping it on battle sight zero or a shorter range, which results in the fire falling short; firing too high when in dense vegetation (while targeted opponents keep low and use cover); taking up poor firing positions; and using erratic and uncontrolled fire, which wastes ammunition. The most bizarre firing practices are seen among the child soldiers and some tribal groups in Africa. Their individual tactics can best be described as antics, especially if there is a camera crew present. One sees them dancing across streets blasting off rounds in the enemy's general direction and brandishing their AKs in the ineffectual "gangsta style."

There is not much to say with regard to specific tactics when using the AK; as it is an individual weapon, there are not many examples in which unique tactics have been employed. However, there are instances of special tactics having been developed using AKs against helicopters.

The Farabundo Martí National Liberation Front (FMLN), pursuing a Marxist war against the El Salvadorian government, found the 7.62mm AKMs were more effective in the jungle and against helicopters than the

AKs in Afghanistan, 1980s (previous pages)

The three basic versions of the 5.45mm AK-74 are depicted here, as three *desantniki* airborne troops fight their way up an Afghan trail, late 1980s. All are paratroopers' folding-stock versions. The leftmost soldier is providing covering fire with an RPKS-74 light machine gun with a 45-round magazine. RPK gunners carried four 45-round magazines. There was no 75-round drum for the RPK-74 as there was for the original 7.62mm RPK. In the foreground is the platoon commander, armed with an AKS-74U submachine gun. The rightmost soldier is armed with the AKS-74 assault rifle, the rifle issued to most troops. To the side of the trail is a discarded 5.45mm "sardine can" ammunition can with the issue can-opener beside it.

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5.56mm round used by the M16-armed government troops. The 7.62mm is preferred over 5.45mm and 5.56mm in Latin America owing to better penetration in jungles and buildings – living up to the reputation of big being most certainly better.

During one action the FMLN prevented Salvadorian helicopters from entering San Isidro while attacking a government brigade's garrison. All guerrillas were ordered to fire with AKs on any approaching helicopter attempting to support the beleaguered garrison, to drive it off. Small groups of guerrillas occupied positions atop higher buildings and successfully blocked the likely helicopter approaches.

The 1993 Battle of Mogadishu, in Somalia – the Black Hawk Down incident – saw similar effectiveness of AKs against helicopters. The tribal militants that the Rangers and other US and UN forces battled were in no way as organized nor as intentionally deployed as the FMLN guerrillas had been for anti-helicopter defense. However, their sheer numbers and completely undisciplined fire actually worked in the favor of the haphazardly organized militants. It created a great deal of confusion among the American helicopters trying to support the ground operation. The militiamen also forced civilians, including women and children, out in front of them as a shield against the American Rangers. The militiamen then took up positions behind walls and fired over the panicked civilians and even between their legs, unconcerned about hitting them. Children and teenagers are said to have charged the Rangers with AKs, some picking them up off the streets and rushing into battle, agitated by the mob mentality. Others were forcibly armed and made to rush the surrounded Rangers under the threat of death.

The Soviets, and latterly the Russians, had a more conventional procedure for engaging aerial targets – fixed-wing aircraft, helicopters, and paratroopers. Armor-piercing Incendiary (AP-I) and tracer ammunition was recommended against aircraft, but ball would be used if AP-I was unavailable. Each type of target requires different firing procedures. Fixed-wing aircraft diving at the shooter required his sight to be set on battle sight zero and he opened fire at a range of 700–900m. For aircraft flying laterally

NVA troops assault an ARVN position armed with AK-47s, although this is most likely a staged photograph. Regardless, the AK and its variants was the mainstay weapon of the NVA from 1967. (Tom Laemlein)

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at over 530km/h squads and platoons simply opened fire ahead of the aircraft so it would fly into a barrage of bullets, what was called "barrier fire." For slower aircraft, including helicopters, the shooter aimed ahead of it by one or more aircraft lengths (depending on the range), to track the aircraft and engage at ranges up to 500m. If tracers were used the angle of fire would be adjusted onto the target. Against paratroopers the shooter would estimate their angle of drift and aim below and ahead of them, as paratroopers do not descend truly vertically.

The VC were taught to fire one helicopter-length ahead at a range of less than 300m, when the helicopters were approaching for a landing. However, it was reported, but not confirmed, that VC were sometimes firing a helicopter-length ahead of choppers which had already landed and were static, which was presumably a less successful tactic.

Tracers, if available, were recommended to be mixed with a ratio of one tracer for every three to five ball rounds. They were especially useful for adjusting fire against moving targets. If firing at light Armored Personnel Carriers (APCs), trucks, and other soft-skin vehicles a ratio of one AP-I to one ball round was recommended. However, AP-I was not available in 5.45mm. For use against similar targets mixes of AP and tracer were recommended if AP-I was not available. Manuals seldom mention the incendiary-tracer round. It appears to be used mainly with RPK machine guns for ranging.

In Vietnam, where US forces first encountered AKs – mostly Chinese-made Type 56s – the North Vietnamese Army (NVA) put them to good use. They were extremely effective in the dense vegetation and bamboo, penetrating much more effectively than the 5.56mm M16 rifles and .30-cal M2 carbines arming Free World forces. Convoy ambushes on highways were a preferred tactic and AKs proved to be effective owing to the moderate ranges, high rate of fire – enhanced by 30-round magazines – and the 7.62mm round's ability to easily penetrate truck cabs and bodies. They were also very effective for close assaults on firebases. Their short range and full-automatic firepower with high-capacity magazines made them ideal weapons for attacking through barbed wire barriers, and in close-range engagements if they gained the base's interior.

The author is acquainted with a former Soviet paratrooper who served in Afghanistan in 1982–83. He had been trained on the AKMS, but prior to deploying to Afghanistan he and his comrades were issued the AK-74S. They were provided with good training and much practice firing, which included firing at long ranges among hills in a Ural Mountains training area set up to train units specifically for Afghanistan. They appreciated the lighter weapon, but they quickly found that the 5.45mm round had a shorter effective range than the 7.62mm. It was also less effective among dried mud brick buildings in villages and compounds. The most disturbing discovery was that numerous *mujahideen* were armed with AK-74s and the paratroopers suffered the same horrendous wounds they were inflicting on the enemy. The paratrooper felt that both the AKMS and AK-74S were rugged and reliable but he personally preferred the 7.62mm as did many of his comrades. Some did prefer the 5.45mm, mainly for its severe wounding abilities.

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Yugoslavia, 2001. A soldier with the ethnic Albanian UCPMB, or Liberation Army of Presevo, Medvedja and Bujanovac, guards his position on the front near the village of Shoshaj, Serbia, with a Chinese-made Type 56 (AKM). (David Greedy/Newsmakers/ Getty Images)

Many recent and current conflicts are fought in cities and towns with heavily constructed buildings, such as Grozny, Fallujah, or Gaza. The short, compact AK is handy in close confines and the 7.62mm models offer good penetration though doors, interior walls, floors, and ceilings. They are also very effective against automobile bodies and are seldom deflected by safety glass if striking at a glancing angle, as the 5.56mm round can be.

Regardless of its users' skills, the AK is renowned for its reliability and ruggedness. This is due to the fact that its tolerances are loose but the components are designed to function effectively when integrated. Every part was designed to last and to be "soldier-proof." The Russians consider its service life to be at least 25 years. An AK can be buried in mud, dragged through sand, and frozen solid yet will still load and fire. There are reports of rusted AKs being dug up in Vietnam after being buried with dead NVA for months and then fired without cleaning. One can literally drive tent stakes with the butt without damaging the weapon. Most magazines, regardless of the material they are made from, are robust enough to withstand rough handling.

During the Vietnam War the author's Cambodian company discovered a Chinese-made Type 56 in the jungle covered with inches of matted leaves. It was completely rusted, except for the chrome-plated bore and chamber, and the wood furniture was in the first stages of rotting. After returning to the camp a round was found in the chamber, with eight in the magazine, which was rusted in place. It was removed after working in solvent. The weapon was still set on semi-automatic and the selector lever was rusted in place, but again was freed with a little solvent. After ejecting the loaded round, inspecting the bore, and chambering another round from the magazine, the weapon fired without any further cleaning. It had lain in the jungle exposed to the weather for at least a year, possibly much longer. The author does not think an M16 would have been operational after suffering the same extreme conditions.

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Three battle-damaged Chinese Type 56 (AKM) assault rifles in Vietnam. All of these weapons would probably operate, although the lower one, a folding-stock Type 56-1 (AKMS), with its butt and forearm burned off, may not. The upper weapon is a Chinese Type 56 carbine, a copy of the Soviet SKS. (Tom Laemlein)

The primary complaints about the AK are its comparatively short range and poor accuracy. One of the few real advantages the M16 has over the AK is that it has a 20in (508mm) barrel while the AKM's is 436mm. This advantage has been sacrificed as US Army infantry now use M4 carbine versions of the M16A2 with a 14.5in barrel, reducing range, penetration (thanks to the resultant reduced velocity), and accuracy. The AK's barrel is also relatively light, which reduces accuracy and contributes to bullet dispersion – the weapon is already front-heavy so the designers sacrificed accuracy and range for lighter weight and compactness. AKs are not known for tight shot groups at moderate ranges. Well-trained soldiers are taught to aim at the center of mass of personnel targets and to estimate lead (aiming in front) of targets moving laterally. Range estimation is taught at a basic level in order for the rifleman to select the proper range on the rear sight.

Ambushing the Red Army, Afghanistan 1980s (opposite)

Two *mujahideen* dressed in a mixture of civilian and old Afghan Army olive green fatigues act as part of an ambushing party against a Soviet patrol at dusk during the height of the Soviet-Afghan War. They are armed with an AKM (left) and an AK-47 (Chineese Type 56). The AKM's rear sight was a tangent type graduated to 1,000m at 100m increments. The AK-47 was graduated to 800m. "Battle sight zero" was set at 300m. This was accomplished by merely pressing the slide detent buttons and pulling the rear sight slide all the way back. It was not uncommon for formally trained shooters to simply set the sight at 100m, causing the bullets' impact to be low at longer ranges. By only making slight visual elevation/depression adjustments of the sight picture a man-sized target at chest level can be hit without further adjusting the sight itself. When firing at a target whose silhouette is visible against the background of the sky, the glow of a fire, or in this instance snow, the rifle needs to be pointed near the target on the light background to achieve sight alignment. Then the rifle should be shifted and an aim point in the middle of the silhouette selected before opening fire.

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The 7.62x39mm AK, the most widely available caliber, achieves greater penetration through typical cover materials than the 5.56mm owing to its heavier steel-cored bullet – 8.9g (125 grains) as opposed to 4.02g (62 grains). It can penetrate a light earth foxhole parapet, a sandbag, 5cm planks, 15cm diameter timbers, 5cm cement walls, and similar materials. It can also penetrate a steel helmet at 1,000m, 6mm steel plate at 300m, 3.5mm rolled homogeneous armor at 280m, and a Soviet body armor vest at 60m. The Type BZ AP-I round will penetrate 7mm of armor at 200m. The ball rounds effectively penetrate dense brush and bamboo while light 5.56mm high-velocity rounds are easily deflected by the same.

At the author's special forces camp in Vietnam a discussion broke out on the bullet effects of the AK-47 and the M16. Most argued that the high-velocity M16 bullet would penetrate the standard US body armor vest while the slower and bigger AK round would not. The author found a front panel from a damaged armor vest and threw it on the ground behind the team house. He fired two M16 rounds into it from 2m. Neither round penetrated, being tangled in the nylon fibers (this was before Kevlar). The wearer would have been seriously bruised, but otherwise unharmed. Two AK rounds from the same distance went right through and 15–20cm into the hard ground. Throughout the Vietnam War there were many complaints of inadequate body armor, which sometimes failed to protect against 7.62mm AK fire. More recently, Small Arms Protection Inserts (SAPI) or "Sappy plates" were issued to provide additional protection. In the post-2001 Iraq and Afghanistan conflicts, additional retrofitted armor was added to HMMWVs, known as "hillbilly armor" or "gypsy tanks," using available scrap metal as issue up-armor kits were not available.

A group of North Vietnamese soldiers hold their Kalashnikov AK-47 rifles aloft in triumph, 1972. (Mary Evans Picture Library/Salas Collection)

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The author's first experience on the receiving end of AK fire was against a VC unit armed with AKMs and SKSs. The engagement range was less than 50m and the AKMs were firing short full-automatic bursts. While few in number, the AKs were able to lay down a great deal of fire. The author's Cambodian unit was armed with .30cal M2 carbines. Although these were fitted with 30-round magazines and were capable of full-automatic fire, only semi-automatic was used as the M2s overheated rapidly and had serious muzzle climb. The AK's 7.62mm rounds penetrated some of the rubber trees and the smaller hardwood trees that were being used for cover. The light, underpowered .30cal carbine achieved exceedingly poor penetration through the same materials, if it penetrated at all. That particular engagement resulted in a "no decision" and no fatal casualties were suffered by either side. It was just another of countless brief firefights although it clearly demonstrated to the author that the 7.62mm AK outshot the .30cal carbine.

A more serious engagement was against an NVA unit completely armed with AKMs. By then the author's company was armed with M16A1 rifles. Nonetheless, the 5.56mm provided very poor penetration through brush and bamboo while the AKMs easily blasted through such foliage. The AKMs' 30-round magazines greatly improved their firepower, especially since they fired in two- to four-round bursts. The M16A1s, which at that time had only 20-round magazines, were generally fired semi-automatic to prevent overheating and for better control as it rose excessively during full-automatic. When breaking contact, NVA patrols encountering larger forces did not hesitate to fire long full-automatic bursts, up to ten rounds and even more. For the most part NVA troops carried sufficient ammunition and did not hesitate in expending it liberally.

There are instances of US troops using AKs in combat. In Vietnam this was rare, regardless of claims by some individuals. Most units restricted the practice as it would draw friendly fire. In addition, ammunition and

Iraq: a captured Romanian-made AIM, a copy of the AKM, but with a distinctive forearm grip. The AIMS is the folding stock version. Cloth strips have been used as a makeshift sling. The device above the rifle is a Soviet-made tank gunnery periscope. (Tom Laemlein)

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magazines were not interchangeable with US weapons, ammunition resupply could not be provided, and there were concerns as to injuries caused by defective ammunition and weapons. The latter did occur; in addition, over 11,000 exploding cartridges were inserted into enemy ammunition caches by Military Assistance Command Vietnam, Studies and Observations Group (MACV-SOG) under Project *Eldest Son*. Some special forces reconnaissance teams did carry AKs to reinforce their appearance as VC/NVA from a distance and also to mislead the enemy by using weapons with the same sound signature as their own. This way, if an unavoidable firefight ensued with an enemy patrol, it would not sound as if a US unit was involved and attract more enemy.

The author's long-range reconnaissance patrol company in the 1980s undertook standard rifle qualification using Romanian AIMs (an AKM variant with a foregrip) enabling them to become proficient with potential enemy weapons. The 100 AIMs were held by III Corps Opposing Forces Detachment and US-made 7.62x39mm ammunition was available in Army inventories.

AKMs were also extensively used by US troops in Iraq after the 2003 invasion. Four-man M1 Abrams tank crews were authorized four 9mm M9 pistols and two 5.56mm M4 carbines. Owing to the extremely close-range urban engagements in Iraq and the necessity for crewmen to provide security and conduct dismounted patrols, circumstances found them also using readily available AKs; some US infantrymen preferred AKs while fighting among Iraq's concrete buildings, as they offered better penetration and range than M4 carbines. US troops deploying to Afghanistan and Iraq are now given familiarization training on the AK.

The new Iraqi Army initially refused US M16s and wanted AKs, owing to their familiarly with them and to the existence of vast stocks of ammunition. The US acquired AKs and other Russian-style weapons. These were required to be never-fired, fixed-stock AKs produced after 1989 with four magazines and standard accessories. In the meantime Iraqi and Jordanian Army AKs were issued. Nonetheless the Iraqi Army and National Police began to be issued M16A4s and M4s in 2007.

AK-47 vs M16

Endless comparisons have been made between the world's two most widely used assault rifles. Such comparisons, especially if meant to demonstrate that one is better than the other, must be made with caution. While both are intended for close- to moderate-range combat, these are two different weapons with different design philosophies, which use different materials and manufacturing techniques and very different tactical employment concepts. Their ammunition is also very different and this too has a major influence on their effectiveness.

Many of the early comparison efforts were intended to show the M16 in a more favorable light, especially those appearing in US military publications. They were not always very balanced and tended to overstate or downplay

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During a building-clearing exercise in Iraq (those are only role-players in the background) a US soldier wields an AK-type assault rifle fitted with a grenade launcher and an unusual monopod mounting. (Tom Laemlein)

certain factors. The first official comparison was published in January 1963. The Army's Springfield Armory was unimpressed with the AKs it examined as they appeared crudely made and the close-range, full-automatic concept using intermediate cartridges was not fully appreciated. Indeed, the US Army had only just begun to issue the more conventional M14 rifle based on World War II tactics. Most NATO countries were fielding the new FN FAL at the same time. For all practical purposes the M14 and FAL rifles had the same capabilities and they were very different from the AK-47 and AKM. They were the product of World War II assessments that put forward the need for rugged semi-automatic, large-capacity-magazine rifles, accurate at long ranges. In contrast, the AKs were close-assault, selective-fire, high-capacity-magazine, exceedingly robust weapons.

With the introduction of the M16 in 1962 and its widespread issue in 1965 the differences between US and communist bloc small arms became even more apparent. The military's claims of the superiority of the M16 over the AK became rather shrill at times. The fact remains that many, if not most, soldiers who handled the AK – except the generals and ordnance specialists – admitted its superiority over the M16 in many areas.

The original AK-47s were robust weapons with a great deal of effort made to "soldier-proof" them and make them as reliable as possible under any conditions and environment. As with any weapon it was not perfected and there were problems, most of them being minor. Development continued, resulting in three sub-variants (Types I to III) and then the AKM. Most of the modifications were to speed manufacture and reduce costs, but improvements affecting its operation and user compatibility were incorporated too. Its ruggedness is renowned and the M16 did not even come close in comparison. One of the most innovative features was that with the first AKs the bore, chamber, and inside of the gas tube were hard chrome-plated, something the original M16s lacked. This reduced erosion and expended propellant and gas residue, helped prevent cartridges from getting stuck in the chamber, eased cleaning, and prolonged the weapon's life.

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An officer of the Mongolian army (aka the General Purpose Force) in Afghanistan describes the Soviet-made AKMS folding stock assault rifle to US Army soldiers. The weapon was probably made in the early 1960s and is still in active service. Mongolia has also deployed peacekeeping troops throughout Africa as well as in Kosovo. (Tom Laemlein)

The AK was made of non-strategic-critical materials, except for the chrome, while the M16 was largely made of aircraft-grade aluminum, some steel, fiberglass-impregnated resin, and plastics, leading to it being tagged the "Mattel Toy rifle." Workers making AKs did not have to be as skilled as those on M16 production lines. Much use was made of riveting and pins to hold parts in place.

Ammunition was another key distinguishing factor. An August 1964 Army report stated, "The Remington caliber .223 round common to all 5.56mm systems is considered inferior to the 7.62mm NATO standard round in all respects except that of weight." The AK's 7.62mm had more knockdown and penetration power, much more so than the M16's 5.56mm, which offered very poor penetration of common cover materials and even dense vegetation. This proved critical in Vietnam, much more so than is often realized. The Soviets went with an extruded (aka stick) propellant, which burned faster and cleaner than the M16's ball powder. The Soviets had been forced to use poor-grade propellants in World War II and while postwar issue ammunition was of better quality, they had taken this into account in the AK's design, in the event that they might be forced to use low-grade propellants in the future. On the other hand the early M16 ammunition used slower-burning high-fouling ball propellant as opposed to the extruded propellant used during the M16's acceptance testing, a 1964 specification change made by the Ordnance Department. This was a major contributor to the extreme problems encountered with the M16 and also increased the rifle's rate of fire to an unacceptable 850–1,000rpm. In the mid-1960s extruded propellant-loaded cartridges began to enter the inventory, but ball propellant continued to be issued. Hand-in-hand with this was the fact that troops were not trained to clean the M16 effectively and that the special cleaning kits and lubricants were not issued, all made the more complicated by the rumor that the M16 was "self-cleaning." Many of the units receiving M16s after arriving in Vietnam with M14s were not taught proper and specific cleaning procedures; after all, it was "just another rifle."

The M16 fouling problem was amplified by the design of the gas system. It did not have a separate gas piston. The gas was directed into a chamber

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inside the bolt carrier then directly pushed the bolt back. The system increased accuracy and reduced recoil, but with heavy fouling would seize up and direct fouling directly into the receiver. It also directed more heat into the receiver, which burned off lubricants. This resulted in more frequent cleaning and re-applying lubricant. The AK's gas tube had vents allowing fouled excess gas to escape rather than being directed into the action.

One advantage held by the M16 was that the ammunition and magazines were lighter, enabling the soldier to carry more, and thus, in theory, increasing his firepower. The M14 rifle had a basic load of five 20-round magazines while the M16's was nine 20-round magazines. But in Vietnam soldiers carried double this load and even more.

The M16 underwent a major redesign resulting in the M16A1, adopted in early 1967, to include: redesigned bolt, bolt forward assist assembly (to ensure cartridges were fully chambered), chrome-lined chamber, rifling twist changed to 1-in-9 twist from 1-in-7 to reduce fouling, redesigned buffer to reduce the rate of fire, flash suppressor that did not hang up on vegetation, protected magazine release to prevent accidental release, and cleaning kit compartment in the butt. Later the bore was chrome-plated and other minor improvements made. Proper cleaning kits and lubricants coupled with great care in cleaning did much to improve the "black rifle's" reliability.

There were still complaints of the light magazines being easily damaged, inadequate magazine capacity (30-round magazines were not available until after Vietnam), rusting of the bolt carrier and ejection port cover, and the hand guard becoming so hot during prolonged firing that it could not be held. It also broke easily. The relatively light and flimsy rifle was not rugged enough, made for poor bayonet fighting, and could be damaged by firing rifle grenades (this practice was suspended). It was recommended that two magazines should not be taped together as the magazine release was too weak. It was notoriously inaccurate on full-automatic and overheated rapidly. Also, troops were not taught to fire short three- to four-round bursts, but tended to "pray and spray," simply blasting off whole magazines. The NVA the author encountered tended to fire short controlled bursts. The author directed his company to use semi-automatic only – not that they always complied.

NVA troops during a water-crossing exercise. A Type 56 (AKM) rests on his flotation device. (Tom Laemlein)

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On the plus side the M16A1 had better sights, to include rear sight windage adjustment, its light recoil improved accuracy, and it was indeed more accurate than the AK-47. However, typical combat ranges in Vietnam were under 100m, often much closer and seldom ever over 200–300m, making long-range accuracy a moot point. The AK's rear sight was placed well forward to prevent the vision-blurring inherent to the open-notch sight. But this reduced the sight radius (distance) between front and rear sights, further contributing to reduced accuracy.

The Type 56, AK-47, and AKM proved highly effective in Vietnam. They were robust enough to survive the environmental extremes and rough use. M16 forearms and stocks frequently broke. Type 56 and other AK stocks of the era were mostly wood, sometimes laminated. They could crack, but there were few swelling problems from constant wetness, and, in any case, environmentally and battle-damaged wooden furniture was easily replaced by unit carpenters. The AK did not require special lubricants and cleaning tools. The NVA/VC made do with any sort of lubricant, even sewing machine and motor oils. Besides, the weapon could go a long time without any cleaning. In the hands of untrained militia or child soldiers little or no cleaning was undertaken, except perhaps oiling the exterior, simply pouring oil into the receiver, and wiping off dust. Its generous internal tolerances allowed it to operate not only fouled, but choked with dirt, mud, or sand. An ice-frozen AK was simply urinated on and it functioned.

Despite the arguments, the truth of the matter is that the AK was more robust, more reliable, regardless of its condition and cleanliness, and achieved better penetration through dense vegetation and typical cover materials than the M16.

Besides the simple comparison of the two weapons' physical characteristics, there are other factors to consider, especially with regard to their design and employment concepts. Irrespective of specific

Type 56 (AKM) assault rifle, M16A1 and M14 rifle characteristics

	Type 56	M16A1	M14
Caliber	7.62x39mm	5.56x45mm	7.62x51mm
Overall length	872mm (34.33in)	762mm (30in)	1181mm (46.5in)
Barrel length	414mm (16.29in)	508mm (20in)	559mm (22in)
Weight w/o magazine	3.87kg (8.53lb)	2.88kg (6.35lb)	5.2kg (11.5lb)
Magazine	30-rd curved	20-rd straight	20-rd straight
Cyclic rate	600rpm	700–800rpm	700–750rpm*
Mode of fire	full- & semi-auto	semi- & full-auto	semi-auto
Muzzle velocity	710m/s (2329 fps)	990m/s (3250 fps)	850m/s (2800fps)
Effective range	400m (440yd)	460m (500yd)	460m (500yd)
Bayonet	folding spike	M7 double-edged	M6 double-edged
Grenade launcher	none	prohibited from use	M76 spigot

* While the M14 could be set to fire full-automatic when adapted to the automatic rifle role, it was issued in semi-automatic only in the infantry rifle role.

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advantages and disadvantages of either weapon, there are many situations in which one is preferred over the other. Neither will be found to be the better "all-purpose" weapon. In addition, the different models and variants of each system will mean significant differences. To make a fair comparison two groups of three weapons have been selected. Firstly, the Vietnam-era Chinese-made Type 56 (based on the AKM) used by the NVA is compared with the M16A1, used by the US armed forces plus other Free World forces; the M14 rifle is also included in this group for comparison purposes as it saw use early in Vietnam. Secondly, the current AK-74M rifle used by the Russian Army is compared against the M4 carbine used by the US Army; the M16A4 rifle used by the Marine Corps is also included in this group. The M4 is the carbine version of the M16A2 rifle used by the Army.

In the present era the AK-74 is said to be nothing more than an upgraded AKM with a smaller-caliber bullet. The new AK has introduced better materials, possesses improved manufacturing refinements, and offers a number of functional improvements, coupled with a more deadly, somewhat more accurate cartridge. Although the new 5.45mm round reduced the AK's beneficial cover-penetrating qualities, it is more lethal to unprotected individuals.

The AK-74M is slightly lighter than the AKM, but it is a little longer owing to the quite effective flash suppressor and compensator which has been added. The M16A4 has in the meantime grown heavier and over

A Polish soldier participates in an exercise with a PMKM (AKM) assault rifle fitted with the MILES transmitter (Multiple Integrated Laser Engagement System) using blanks and invisible laser beams to indicate hits on opponents. Note the laser receptors on his helmet. Unseen receptors are on his combat harness. When "hit" a buzzer and light will flash on his left shoulder. Note the double magazines taped together. In his left hand he holds a walkie-talkie. (Raymond A. Barnard/DoD)

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5cm longer than the new AK. The added weight is due to increased use of steel to make it more robust, an area in which it still suffers, and to the addition of refinements. The newer versions' barrels are heavier too. The AK's slower rate of fire is preferred over that of the M4/M16, which is simply too high. The M4 carbine used by Army infantry may be more compact and lighter, but the shortened barrel, shorter than the AK's, greatly sacrifices range, penetration, and accuracy. They are a great many complaints over those issues, despite improvements; there are also still complaints about reliability, although these have been reduced in recent years. Susceptibility to dust and water is still an ongoing problem. Most of those who have handled and fired AKs still feel they are more rugged and reliable than their American counterparts.

While newer AKs are fitted with sight rails for night vision sights, the later M4/M16s have Picatinny rails allowing a variety of night vision devices, laser aiming modules, telescopes, reflex sights, tactical lights, foregrips, and other accessories to be attached. This greatly improves accuracy and utility. Also, though it is not an essential feature, the M16 family does have a carrying handle, which AKs, even the machine gun versions, lack. This handle can also be used to mount sighting devices and is removable on the M4/M4A1 and M16A3/M16A4, making it even more flexible for accepting different sighting devices.

In the final analysis, if equally manned squads armed with AKs and M16s were to engage one another, the weapons would not determine the outcome. The squad with the better leadership, motivation, flexibility, greater experience in effective battle drill, and the better ability to see, understand, and use the terrain to its advantage would be the winner. The weapon, after all, is only as good as the warrior who wages war with it.

AK-74M assault rifle, M4 carbine, and M16A4 rifle characteristics

	AK-74M	M4	M16A4
Caliber	5.45x39mm	5.56x45mm	5.56x45mm
Overall length	943mm (37.12in)	838mm (33in)	1006mm (39.63in)
Length w/stock folded	705mm (27.75in)	757mm (29.8in)	
Barrel length	475mm (18.70in)	368mm (14.5in)	508mm (20in)
Weight w/o magazine	3.63kg (8.00lb)	2.7kg (5.9lb)	4.11kg (9.08lb)
Magazine	30-rd curved	30-rd curved	30-rd curved
Cyclic rate	650rpm	700–900rpm	700–950rpm
Mode of fire	full- & semi-auto	semi- & 3-rd burst	semi- & full-auto
Muzzle velocity	900m/s (2952fps)	905m/s (2970fps)	853m/s (2800fps)
Effective range	500m (550yd)	400m (440yd)	550m (500yd)
Bayonet	6H5 single-edged	M9 single-edged	multipurpose single-edged
Grenade launcher	All may be fitted with 40mm under-barrel grenade launchers		

Note: US Army infantry are presently armed with the M4 carbine while the US Marines use the M16A4 rifle. The Army also uses the M16A2, similar to the M16A4. The M16A3 is used by the US Navy Sea, Air and Land (SEAL) forces.

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IMPACT

The people's assault rifle

The impact of the AK-47 on the world, not just militarily and politically, but culturally and socially, cannot be argued. The "people's weapon" has wreaked havoc in virtually every war, revolt, insurrection, and coup since the early 1960s and will continue to do so for the foreseeable future. It has seen its share of use in criminal hands and has been at the center of gun control controversy in America and elsewhere. The AK-47 is a perennial symbol of rebels, terrorists, freedom fighters, guerrillas, and gangsters. Hundreds of thousands, if not millions of people have died via the muzzle of the AK. While there is much sensationalism over the casualties inflicted by improvised explosive devices (IED) and suicide bombers in Iran, Afghanistan, and other trouble spots, the Kalashnikov has killed and wounded more soldiers and civilians. After all, in the aftermath of IED ambushes as troops dismount to establish security, recover survivors, and counterattack it is the AK and RPG barrages that can inflict the greater number of casualties.

Kalashnikov himself has frequently felt the need to defend his invention, claiming that he designed it to help drive the fascist invaders from his Motherland and to prevent another invasion:

> I invented it for the protection of the Motherland. I have no regrets and bear no responsibility for how politicians have used it.

He never dreamed of its being passed, traded, or sold by the millions to support oppression and military gain outside of the Soviet Union.

> I have nothing to do with destruction that my invention carries with it. An armament in itself never kills anybody. It is the people using it who

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Aviators and an AK: military chic in Africa. No self-respecting soldier should be without a Kalashnikov, and this bodyguard to Liberia's Charles Taylor is no exception. (© Mike Goldwater/Alamy)

> have to decide, and that is where the fault lies. I will again repeat that I never made the machine gun for people to fight with each other.

At other times, though, he has used a more reflective tone, commenting sadly:

> I would prefer to have invented a machine that people could use and that would help farmers with their work – for example a lawnmower.

Regardless of its value as a military weapon its cultural influence is immense. The "Kalashnikov culture" has risen in many war-torn societies and countries. The Russian nickname for the Kalashnikov, the "*Kalash*," has frequently been bestowed as a boy's name in some African counties. Within Mexican drug gangs the AK is known as the *cuerno de chivo* – "goat horn" – because of its distinctive curved magazine. In some areas in Africa it is customary to paint AKs with bright tribal colors and symbols. Brass tacks and other decorations, including colored ribbons and good luck charms, have adorned AKs, as have painted and hand-carved slogans and mottos on the stocks. Alongside the Uzi, M16, and the Tommy gun it is one of the most recognizable arms in the world.

The description of the AK is probably best summed up by the fictional character Yuri Orlov (played by Nicolas Cage) in the movie *Lord of War* (2005):

> It's the world's most popular assault rifle, a weapon all fighters love. An elegantly simple nine-pound amalgamation of forged steel and plywood, it doesn't break, jam, or overheat. It will fire whether it's covered in mud or filled with sand. It's so easy even a child could use it, and they do. The Soviets put the gun on a coin. Mozambique put it on their flag. Since the end of the Cold War, the Kalashnikov has become the Russian people's greatest export. After that comes vodka, caviar, suicidal novelists. One thing is for sure; no one was lining up to buy their cars.

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Then there was Ordell Robbie's (Samuel L. Jackson) memorable line in *Jackie Brown* (1997):

> AK-47. The very best there is. When you absolutely, positively got to kill every [*expletive*] in the room.

The Mozambique flag and national emblem (also appearing on coins and currency) have displayed the AK-47, representing defense and vigilance, since 1975. Contests for a new flag and emblem were held in 1999 and again in 2005. Many proposals deleted the *Kalash* to demonstrate that peace had returned to the land, but all submitted designs in both contests were rejected and the issue, which has caused something of a split in the country, has not been resolved.

Saddam Hussein had two AKs in the hiding-hole from which he was pulled by US troops. His son Uday, killed by US forces, possessed several gold-plated AKs. Saddam's "Mother of all Battles Mosque," built in 2001 to commemorate his self-declared Gulf War "victory," features four minarets shaped like AK-47 rifle barrels. Several small statues are found in Iraq commemorating AKs. Saddam and Osama bin Laden were often pictured brandishing AKs. It is very common for terrorists and revolutionaries, when releasing video proclamations and threats of mayhem, to display AKs in an effort to demonstrate their determination.

"AK-47" has had more cultural impact on the Western world than it is often given credit for. Its name recognition is so high that in 2004 a British firm, in collaboration with Kalashnikov himself, marketed an 82-proof vodka bearing the Kalashnikov Vodka label. Kalashnikov was the honorary president of the Kalashnikov Joint Stock Vodka Company and was finally able to profit from his invention. It was originally sold in normal 1-liter bottles, bearing the general's likeness, but in 2007 a 1-liter bottle shaped like an AK-47 and packaged in an olive drab wooden military-type crate became available.

This captured AK-47 has had its magazine pistol grip and butt stock wrapped with blue decorative tape. Such embellishments are common in many parts of the world. (Tom Laemlein)

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2004 also saw the opening of the Kalashnikov Weapons Museum and Exhibition Center (aka Mikhail Kalashnikov Museum) in Izhevsk in an effort to foster tourism in the stagnant city. The city is also the birthplace of the current National Basketball Association player Andrei Kirilenk with the Utah Jazz team. Being from Izhevsk, he is naturally nicknamed "AK-47" and his jersey number is "47".

The newly elected president of Nicaragua, Violeta Chamorro, presented President George W. Bush with a plaque-mounted AK-47 that had been blow-torched in half to demonstrate the new democratic government's resolve to disarm the country after defeating the Sandinistas. In downtown Managua, Nicaragua, stands the Monument to the True Heroes of the Revolution: an overly muscular figure known locally as "the Hulk" holds a pick-ax in one hand and defiantly raises an AK-47 over his head with the other.

The Ningbo Dacheng Advanced Material Company in Zhejiang, China, produces body armor and protective clothing components and offers a line of special clothing fabrics named "AK-47." Miniature and full-size toy AK-47s are made along with paintball guns and Airsoft plastic pellet-firing replicas used in tactical simulation war-gaming, as well as non-firing replicas that look like actual weapons (although realistic-appearing replicas and Airsoft guns are required to have a red muzzle to alert police that these are non-lethal weapon lookalikes).

In January 2004 *Playboy* magazine listed "50 Products That Changed the World" in its 50th anniversary issue. The AK-47 assault rifle was listed as number four, behind the Apple Macintosh desk computer, the birth-control pill, and the Sony Betamax video player.

The Sandinistas' muscle-bound Monument to the True Heroes of the Revolution, Managua, Nicaragua, better known as "the Hulk," defiantly thrusts an AK-47 skyward. (© Jason Bleibtreu/ Sygma/Corbis)

The AK has also had a major impact on the right to bear arms in America. The ongoing argument over gun control is very much fueled by the ban on the import of foreign-made assault rifles, especially AKs owing to their notoriety. The Egyptian-made Automatic Rifle Misr (ARM) built by the Maadi Company for Engineering was the first AK imported into the US in 1982. These were semi-automatic rifles only, as are other imports. The plant had been established with the aid of Russian engineers and some of the staff were trained in the USSR. These were soon followed by Chinese AKSs – semi-automatic Type 56s. The first Egyptian rifles ran at over US$1,000, but the Chinese models were selling for under US$300. Hungarian and Yugoslavian AKs entered the country before long. Most of those buying semi-automatic AKs and the many variants were responsible law-abiding citizens, collectors, and military-style competitive shooters. Unfortunately, as with any weapon, some of these AKs were acquired by criminals and the mentally unbalanced. A number of killings, robberies, and other criminal incidents saw the use of AKs and other assault-

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Saudi Arabia and AK bling. Members of King Khalid's national guard and southern tribes conduct military maneuvers in 1979, brandishing gold-plated Kalashnikov rifles. (© Patrick Chauvel/Sygma/Corbis)

type weapons. The rare encounters the police experienced with AKs and other assault rifle-armed criminals often found the law enforcement officers outgunned. This held true even when the police were armed with M4 and M16-type weapons.

After studying the situation of assault rifle importation, in 1989 the US government banned the import of certain assault rifles that failed to meet specified "sporting" criteria. Ironically, this actually created a higher demand for the warehoused weapons which had been imported and not yet sold. "Pre-ban" AKs and other weapons drew high prices, as did parts. Foreign exporters also made cosmetic changes to the weapons so that they would fit the "sporting" criteria and could be imported. They nonetheless had the same capabilities as the pre-ban "militarized" AKs. Components of AKs were also produced in the States, mainly lower receivers, and assembly was completed from imported parts. Further restrictions and bans were enacted, but the ban was allowed to expire in 2004 as it had achieved little.

Efforts to disarm insurgents, guerrillas, and militias as local conflicts wound down have proved to be even more difficult than controlling firearms in America, even when backed by a substantial police and military force. The former users are reluctant to turn in arms owing to the fear that fighting may again break out, distrust of the new government and its amnesty offers, fear of reprisal, and the simple fact that the weapons can be used for hunting and for self-defense against civil crimes, and can be pulled out of hiding in the event that a civil war or revolution arises or is renewed.

Despite collection efforts and weapon buy-back programs, in Latin American countries AKs and other weapons remain in the hands of street gangs, crime rings, and other individuals, contributing to high crime rates. In Iraq US$125 was paid for AKs that were turned in and thousands were bought back, but it did little to curtail the ethnic and sectarian violence. More often such buy-back programs resulted in large numbers of obsolete, junk, and broken weapons being turned in for individual profit while the prime weapons, including operational AKs, were kept in hiding. In pre-

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2003 Iraq Sunni Muslims, who controlled the government, could pay a US$150 license fee allowing them to own any number of small arms. Shiite Muslims could not. Since Saddam's downfall any Iraqi can obtain a police-issued license allowing him or her to own one AK-47 and one magazine per family for self-defense.

The AK's price has ranged from a chicken to over a thousand dollars while ammunition has gone for pennies to more than a dollar a round. Usually ammunition is sold at the lower end of the price range. On the open and black markets in developing countries AKs more typically sell for US$100–400. It is commonplace to find AK ammunition and magazines, and even the weapons themselves, displayed on tables in open-air markets alongside everyday items from toiletries to pirated DVDs. The AK is readily available just about anywhere in the world, so available that insurgents, gangs, and militias do not even concern themselves with spare parts. There are always plenty of extra AKs to cannibalize for parts. Ammunition is widely available as it is now being produced by numerous countries and there are huge stockpiles throughout the world, all available for a low price. Countries producing 7.62x39mm for military and commercial sales include: Armenia, Bosnia, Brazil, China, Bulgaria, Czech Republic, Egypt, Finland, Hungary, India, Indonesia, Iran, Israel, North Korea, Pakistan, Poland, Portugal, Romania, Russia, Serbia, Slovakia, South Korea, United States, and Venezuela. (East Germany and Iraq previously produced it.)

While AKs of some sort will be with us for some time, the weapon's Russian successor has already been adopted, at least officially if not in actuality. The 5.45x39mm AN-94 (*Avtomat Nikonov-1994*) began to be issued on a limited basis to selected units in 1997. The gas-operated "Abakan" is unique in that it uses what is called the "blowback shifted pulse" method of operation. It offers a unique two-round burst function at a claimed 1,800rpm rate of fire. The action fires the second shot of the burst so fast that it escapes before the first shot's recoil is felt, thus potentially allowing the two rounds to hit the same point. On full-automatic it fires 600rpm and it can also fire semi-automatic. The weapon is expensive, complex, slow to produce, and about a pound heavier than the AK-74. Apparently it is not currently in production and the vast majority of the Russian armed forces are still armed with the AK-74 and other variants. It is not known if AN-94 production will ever resume.

The AK-47 has arguably had a much more significant impact on the arms world than any other single weapon. Besides setting the standard of what an assault rifle is, it was one of the first weapons that proved a single basic design could be used for a family of weapons, from submachine guns to light machine guns to sniper rifles. This reduced design and development time, made training easier, and allowed the interchangeability of parts. The AK-47 also set the standard for incorporating both simplicity and reliability into a weapon's design. There is no question that the AK-47's legendary ruggedness is a key factor of its success and now a goal to be achieved by any new weapon. It is no accident that so many new weapons bear a remarkable resemblance to Comrade Kalashnikov's ordnance opus.

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The AK-74's supposed replacement, the 5.45x39mm AN-94 *(Avtomat Nikonov-1994)* has seen limited issue to select units. Further production is doubtful. This AN-94 mounts a 40mm GP-30 grenade launcher, which is also used on AK-74s.

While there are weapons vying to replace the AK, it is a difficult challenge, especially since the AK has not truly reached its design limits. There is always room for minor design improvements, new features, and new manufacturing techniques, and lighter and stronger composite materials can be incorporated to further improve the weapon. Such initiatives will raise the cost, but keep the weapon competitive with more recent designs.

China is the largest user of the AK, but it is in the process of replacing it with the innovative 5.8x42mm QBZ-95 assault rifle (*Qing Buqiang Zu* – light rifle family), which has a bullpup design, i.e. the magazine is located behind the trigger and firing assembly to provide for a shorter weapon without sacrificing barrel length. However, the Chinese are experiencing ergonomic problems with the QBZ and are not pleased with its short range and moderate accuracy. As a result, AK-type rifles will remain in use within the People's Liberation Army for quite some time.

It has been said that the AK could not be improved any further; a new design was needed to achieve further improvements. However, there are reported to be counter-recoil AKs under development that will negate the weapon's recoil and provide a more accurate and controllable automatic weapon. As older AKs wear out and the production of newer post-2000 models increases in Russia, in other countries possessing plants, and in countries which have not yet even constructed plants, the supply of AKs will spread. If NATO nations retain the 5.56mm (not the best choice for a combat caliber), it can be expected that more AKs in this caliber will appear alongside the stalwart 7.62mm and 5.45mm AKs.

There is little doubt that the Kalashnikov, regardless of what models may still be in use, will be in the hands of professional soldiers, warriors, militiamen, guerrillas, terrorists, idealists, fanatics, and criminals for a very long time to come, perhaps even for generations.

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APPENDIX

Kalashnikov assault rifle users
AK-47s, AKMs, AK-74s, AK-100s, and variants

Countries using AKs only in police, special, or paramilitary organizations are not listed.
** Countries manufacturing AKs and variants.*

Afghanistan
Albania*
Algeria
Armenia
Azerbaijan
Bangladesh
Belarus
Benin
Botswana
Bulgaria*
Cambodia
Cape Verde
Central African Republic
Chad
Chechnya
China*
Comoros
Congo-Brazzaville
Cuba
Democratic Republic of the Congo
East Germany (* formerly manufactured)
Egypt*
Estonia
Namibia
Equatorial Guinea
Ethiopia*
Finland*
Gabon
Georgia
Guinea-Bissau
Guyana
Hungary*
India*
Indonesia
Iran*
Iraq (* formerly manufactured)
Israel*
Jordan
Kazakhstan
Kyrgyzstan
Laos
Lesotho
Liberia
Libya
Madagascar
Mali
Moldova
Mongolia
Morocco
Mozambique
Nigeria*
North Korea*
Pakistan (* local handmade)
Peru
Poland*
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Editor's note

Metric cartridges designations (e.g. 7.62x54mmR) identify first the bullet caliber in millimeters; the second number is the case length. An "R" means it is a rimmed cartridge, "SR" designates a semi-rimmed cartridge, rimless cartridges have no letter.

To convert metric measurements to imperial, note:

1 mile = 1.6km
1 yard = 0.9m
1ft = 0.3m
1in = 25.4mm

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List of acronyms

AK	*Avtomat Kalashnikova* – Automatic Kalashnikov
IZHMASH	Izhevsk Mechanical Works
MkB	*Maschinenkarabiner* – machine carbine
MP	*Maschinenpistole* – machine pistol
PK and PKM	*Pulemyot Kalashnikova [Modernizirovanniy]* – Kalashnikov machine gun [modernized]
RPD and RPDM	*Ruchnoy Pulemyot Degtyareva [Modernizirovanniy]* – Degtyarev handheld machine gun [modernized]
RPK	*Ruchnoy Pulemyot Kalashnikova* – Kalashnikov handheld machine gun
SKS	*Samozaryadniy Karabin sistemi Simonova* – Simonov Self-loading Carbine
StG	*Sturmgewehr* – German designation for assault rifle

Glossary

AVTOMAT	Russian for automatic rifle
BALL	standard jacketed ammunition
BOLT	The part of a firearm that closes the breech for firing, and which holds the firing pin; it also often assists feed and extraction
CLOSED BOLT OPERATION	A weapon that automatically closes the bolt after the last shot is fired. The next shot will be fired when the trigger is pulled without the bolt running forward, unlike an open bolt, which locks to the rear after the last shot is fired
COMPENSATOR	A muzzle device that dissipates muzzle blast to reduce recoil
GAS CYLINDER	The tube through which propellant gas is vented to cause the weapon to operate
OPEN BOLT	A bolt that is held back in the open position (i.e. not closed up to the breech) before firing
OPERATING ROD	The rod inside the gas cylinder that is driven back by gas pressure to operate the weapon
RECEIVER	The main body of a weapon, containing the major working parts
SEAR	The part of the trigger mechanism that holds the hammer back until correct trigger pressure is applied
STRIPPER CLIPS	Clips used to load cartridges into a weapon's magazine

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